



Expansion loop forms pattern
in James Keen's photograph

NOTHING is more gratifying than the sight of a good tool being put to good use. In this issue we are able to report in detail how a number of projects, conceived and prepared by A. G. A., have been intelligently adapted for their own use by member gas companies. . . . First, on page 2, we relate the increased enthusiasm and member participation as the third gas industry-sponsored Mrs. America contest gets underway. . . . On page 6, James F. Purcell tells how NIPSCO used the customer relations training kit prepared by A. G. A. and EEI accounting sections. . . . In Pittsburgh, the three local gas companies have used A. G. A. educational program material for their own "Science in Action" program. . . . And J. H. Dennis tells how A. G. A.'s service manual can reduce costly repeat calls by service men. . . . In addition, our Bureau of Statistics offers a method of estimating gas use of appliances (page 9) and on page 12, our research consultant, Dr. Chaney, gives an informal review of the status solar energy developments. . . . All in all, it's one of those issues that makes us proud of A. G. A., but don't think we are resting on our laurels. As you will read on page 6, a good part of our staff is out in the field right now looking for suggestions on how our projects can be improved.

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*Mrs. America contests start throughout
nation as gas industry sponsors national promotion for third
year; add incentives for state, local winners*

Mrs. America search on again



W. W. Selzer, the business promotion manager of Columbia Gas System Service Corp., has been selected chairman of the A. G. A.-sponsored Mrs. America contest for 1957

a PAR activity

The gas industry's third year of participation in the Mrs. America contest is well under way following a January kick-off, with more than 80 gas companies across the nation holding state meetings and launching their local contest promotions.

Contest applications from all over the country are pouring in with each mail delivery to American Gas Association Headquarters and to the gas company offices from women who want a chance at the famous "Mrs. America" title and its fabulous \$15,000 worth of prizes . . . including a beautiful New Freedom Gas Kitchen and Laundry.

Gas company personnel and A. G. A. staff are constantly

at work processing these applications. Each of the applicants will receive a detailed "official entry blank" to fill out, which she must return together with her favorite recipe and a photograph of herself. These filled-out entry blanks are put through a preliminary screening; then local elimination competitions are held leading up to city and regional contests, and finally to the state finals.

The finals in each state will be completed this year by April 20. The gas companies will then send their state winners in May to the national finals at Ellinor Village, the family resort in Daytona Beach, Florida.

A. G. A. this year has arranged for gas companies to receive \$500 worth of prizes to give to their state winner, at no cost to the gas companies. These prizes include a \$100 travel wardrobe by Sacony, consisting of suits, dresses, a bathing suit and play clothes; a \$100 set of Samsonite magnesium luggage; a \$100 Gruen wrist watch; \$100 worth of "Essent," by Parfums Giro, in four fragrances; and a set of Hallite aluminum utensils by Wearaver.

Each state winner will also receive an all-expense-paid trip for herself and her husband to the grand finals in Florida, and in most cases the gas companies will add other prizes, such as gas appliances.

The national finals at Daytona Beach will be an even bigger affair than in previous years, with the Chamber of Commerce for the entire Daytona Beach area joining with Ellinor Village to back the spectacle. The homemaking events on which the contestants are judged will be held in



Over a myriad of newspaper and magazine clippings referring to Mrs. plus entry blanks for the forthcoming Mrs. America contest, are Managing Director C. S. Stackpole, and staff member Marjorie Lyons



This photo of Mrs. Ramona Deitemeyer, Mrs. America of 1956, appeared on the front cover of "Forecast." The New Freedom Gas Kitchen is much like the one which will be given to the Mrs. America of 1957 as part of her \$15,000 in prizes

the individual villas of Ellinor Village, as in the past, but the staged finals at which the new Mrs. America is announced will be held this year in modern, air conditioned Peabody Auditorium in downtown Daytona Beach. There facilities are better for newspaper, wire service, photographic syndicate, radio, and possible television coverage.

In preparation for this bigger-than-ever national finals, gas companies are going ahead with work on their local and state contests that lead up to the national grand finals.

In Connecticut, the six gas companies who have already signed up to participate have named N. S. Beardow, domestic sales supervisor of The Bridgeport Gas Company, to be Mrs. America state chairman. The other companies in the contest, and their company chairmen, are The Connecticut Power Company, Russell F. Halyburton, assistant to general sales manager; The Hartford Gas Company, Donald R. Schively, manager of sales promotion; The New Haven Gas Co., Herbert W. Korn, sales manager; Greenwich Gas Co., Jack Crowley, new business manager; and Connecticut Light and Power Company, Charles Byron, residential sales manager.

Florida's contest is being run by Peoples Water and Gas Company in North Miami and South Atlantic Gas Company's Orlando division. T. N. Martin, sales manager, is handling details of the contest for Peoples, and Howard Ferris, vice-president and division manager, is South Atlantic's chairman.

Seven companies in Massachusetts have gotten together

on the state Mrs. America promotion: Boston Gas Co., Lawrence Gas Co., North Shore Gas Co., Mystic Valley Gas Co., Springfield Gas Light Co., Lynn Gas and Electric Co., and Brockton Taunton Gas Company. William H. Geller, director of promotion, who handled the promotion for his company last year, is running the contest again for Boston Gas.

Southern Union Gas Co., which is cooperating on a Texas contest with United Gas Corp., will also cover the states of Arizona and New Mexico for the promotion. Allen D. Schrodt, sales coordinator for Southern Union, is handling details.

In the District of Columbia, The Washington Gas Light Company is running the capital contest, with Robert H. Lewis, advertising manager, as contest chairman.

Out on the West Coast, Southern California Gas Company and Southern Counties Gas Company are taking the lead in setting up the California contest. Harold B. Kirk is working on the contest for Southern California, and cooperating with Carlton Brown on Southern Counties.

Delaware Power and Light Company is again running a search for a Mrs. Delaware, and the Georgia state contest so far has the Gas Light Company of Columbus and the South Atlantic Gas Company in Savannah participating. The Idaho contest has been taken over by the Idaho State Liquefied Petroleum Gas Association.

A Mrs. Indiana contest will be sponsored by a group of six gas companies: Hoosier Gas Corp., Indiana Gas &

After completing application blanks obtained from local gas companies or A. G. A., applicants receive these entry blanks

Water Co., Inc., Northern Indiana Public Service Co., Citizens Gas and Coke Utility, Southern Indiana Gas and Electric Co., and Central Indiana Gas Company. Handling contest details will be Harry G. Custred, sales manager, for Hoosier; H. C. Spencer, supervisor of merchandise sales, for Indiana Gas & Water; P. F. Atlas, manager, advertising and sales promotion, for Northern Indiana; E. M. Demlow, sales manager, for Citizens Gas & Coke; C. K. Graham, vice-president, for Southern Indiana; and George W. Leidholdt for Central Indiana.

Jerome P. Happ, general sales manager, is contest chairman for his company, North Shore Gas Company in Waukegan, which will run the Illinois contest.

In Kentucky, the Central Kentucky Natural Gas Company will have John William Barker, district promotion manager, handling its contest, in conjunction with J. B. Chenoweth, who holds the same position with United Fuel Gas Company in Huntington, W. Va.

Maryland has the Hagerstown Gas Company signed up to participate in the promotion so far, with A. J. Allen, manager, acting as contact. Two companies in Nebraska have signed up: Metropolitan Utilities District in Omaha, and Central Electric and Gas Company in Lincoln. Peter F. Broad, sales representative, will run the contest for the former company, and Carl J. Olson, general sales manager, for the latter.

(Continued on page 34)

New TV series features automatic top burner control

A series of 13 half-hour television shows starring Dione Lucas, one of America's foremost cooking authorities, is being offered to gas utilities by Robertshaw-Fulton Controls Company. Gas utilities accepting the filmed television package will pay only for the local air time plus a small service charge.

The nation-wide show, sponsored last

year by 84 gas utilities across the country, is aimed at encouraging consumer interest in automatic gas cookery and the use of gas as the modern home fuel. Particular emphasis will be placed on automatic top burner temperature controls, called the "Thermal Eye," now available on many new gas ranges.

C. S. Stackpole, managing director of

American Gas Association, stated: "This exciting national TV program provides a real opportunity to stimulate greater public acceptance of gas as a truly modern cooking fuel."

Urging all gas utilities to "give serious consideration" to the Robertshaw-Fulton film offer in local gas range sales and promotional campaigns, he said, "I sincerely believe that it (Dione Lucas Show) merits the support of all gas utility companies."

In assuming the production costs of the popular TV series, Charles M. Stainton, vice-president and director of sales for Robertshaw-Fulton, said his company is providing the opportunity for local gas utilities to bring to their market area top-flight TV at little more than the cost of station time.

A complete package of promotional materials in support of the homemaker show will be available to the gas companies. This includes point of sale material, newspaper advertising mats, brochures for range salesmen, and material on new top burner controls.

Arrangement of the half-hour show includes three spots of one-minute each, in which sponsors can present their own

(Continued on page 35)



Dione Lucas, popular TV cooking authority, serves warm plum tart to gas industry men following her daily homemaker show. Left to right: Frank H. Post, assistant vice-president, Robertshaw-Fulton Controls Co.; C. S. Stackpole, managing director, A. G. A.; and Harold Massey, managing director, GAMA

Initiate regional round-tables

Major activities of the American Gas Association are being discussed by top gas company executives in a series of regional "round-table" meetings authorized by the A. G. A. Board of Directors. As this issue goes to press, all-day meetings have been held in New York and Dallas, with nine others scheduled to take place during the following six weeks.

About a year ago, a survey sponsored by A. G. A. was conducted by Fuller & Smith & Ross regarding the sales, promotional and advertising activities of the Association and the industry. Fifty major member utility companies were interviewed during this survey, and it was apparent from the survey results that many executives and member company sales managers did not have an over-all clear picture of Association activities in the fields of promotion, advertising and other major Association programs.

In view of this situation, one of the recommendations made under the Fuller & Smith & Ross report was that a series of meetings be organized for the purpose of informing the executives and sales managerial personnel of member utility companies of the activities of the Association, to the end of obtaining their comments, criticisms and recommendations.

In authorizing these important round-tables, the A. G. A. Board placed major emphasis on the opportunity to obtain the suggestions and comments of regional executives on how these programs can be made more responsive to the needs of individual companies.

The second objective is to bring to each regional round-table up-to-date reports on the activities and progress of the vitally important Gas Industry Development, PAR, Public Information and other Association programs.

The general format of the remaining nine meetings is expected to follow the agenda of the first two meetings in New York and Dallas. First order of business will be a discussion of the Gas Industry Development Program, led by someone



First of a series of executive round-tables held in New York, Jan. 16, James Comerford (3rd from left, front table) presiding. Frank Williams of A. G. A. (standing) outlines PAR promotion plans



Second regional round-table took place at Dallas on Jan. 20. Presiding was C. H. Zachry (at head of table, far right), first vice-president of A. G. A., president of Southern Union Gas

actively engaged in this work.

The basic factors leading to the development of the GID program and the effectiveness of the program will be discussed. Highlights of the "test cities" program will be reported.

Next will come a detailed analysis of how the GID program was applied to a specific "test city." This discussion will revolve around a particular "test city,"

usually situated in the territory where the regional round-table is held.

After a general discussion of the GID program as a whole, the group will hear of the objectives, scope and progress of the PAR Program. After lunch—where informal discussion can be expected to continue—a more detailed report on activities under PAR—promotion, adver-

(Continued on page 34)

NIPSCO's customer relations training plan



Chosen discussion leaders are shown how to use slide projectors for use in presenting course material.

By JAMES F. PURCELL

*Manager of Public Relations
Northern Indiana Public Service
Company
Hammond, Indiana*

There weren't any really serious customer relations problems at Northern Indiana Public Service Company last year when Dean H. Mitchell, NIPSCO president, decided to step-up the company's customer relations program. Courtesy, tact—good service to customers—had long been a hallmark of the utility's operation.

But Dean Mitchell knew that every program, no matter how successful, needed going over now and then, and he thought the new comprehensive course prepared jointly by the American Gas Association and the Edison Electric Institute might be refreshing for long-service employees and a good place to begin teaching newer employees the value



*Using A.G.A.-EEI training kit,
Northern Indiana Public Service indoctrinates employees
in proper customer relations*

Informal atmosphere at training sessions encourages open and take attitude between discussion leaders and participants.





how to speaker displays booklets that form part of customer relations training kit, for continued study after course



Speech-making practice was required preliminary training for discussion group leaders. Recorded on tape, speeches are played back to speaker for criticism and final polish

of good will.

For more than 17 years Mr. Mitchell had been preaching the importance of good customer relations. In fact, in 1938 when he became president of the company, he set forth a simple credo for every NIPSCO employee to follow. It reads something like this:

"You are the Northern Indiana Public Service Company in the eyes of every customer with whom you deal.

"Inasmuch as ours is a business with whose workings the public is not familiar, it is particularly important that all employees keep this fact in mind. A matter which is an everyday occurrence to you may be unusual to a customer. There is no question so unimportant that it cannot be answered courteously.

"A pleasant contact may be forgotten—discourteous treatment is nearly always remembered. Courtesy will pay you the personal dividend of enjoying your contact with the public, and it will pay the company the dividend of customer good will."

This credo became a platform for the company's public relations program, for Mr. Mitchell knew that good customer relations are basic to good public relations and that good public relations are essential to lasting success.

Activation of the A. G. A.-EEI program began with the appointment of a study committee to review the program and devise a sensible, efficient plan for presenting the course. Those on the committee were Carl D. Rees, executive assistant; Edward M. Alt, assistant secretary-treasurer; Walter K. Paul, manager of industrial relations; Walter H. Kussmaul, general operating superintendent; and Eugene M. Shorb, manager of training and utilization.

The five specialized subjects covered in the A. G. A.-EEI course keenly interested the people at NIPSCO. They included general principles of customer relations, good telephone manners, office and field interviews, and the proper han-

dling of company correspondence.

It was believed these subjects pinpointed typical day-to-day contacts NIPSCO employees make with customers throughout the utility's vast territory. The territory covering an area of 12,000 square miles spreads across the northern part of the Hoosier state. More than 480,000 gas and electric customers are served by NIPSCO's 3,600 employees.

Finding the course acceptable to the company's traditional policy of good customer relations, the committee decided that each meeting would be limited to two hours and would be conducted on company time. They then proceeded to select discussion leaders capable of conducting employee classes. They chose eight young men who would function as four two-man teams. Each team was assigned a particular course. Educational background, appearance, and maturity dictated the selection of each.

Those selected were employed in dif-

encouraged and slide films, shown by trained able leader, permit use most advanced audio-visual techniques for emphasis



After prepared course session is presented with aid of sound films, floor is thrown open for discussion. Properly planned, this can be most fruitful portion of sessions



E. M. Alt (far left), member of A. G. A. Accounting Section subcommittee which prepared customer relations kit, confers on its adaptation to suit NIPSCO's particular problems



These discussion group leaders learn by trying. Here they meet to compare notes in preparation for more customer relations training sessions, which will continue at NIPSCO

ferent districts of the company. They included John Gastel, supervisor of customer representatives, Gary; Richard Reetz, assistant supervisor of personnel and safety, Fort Wayne; Richard Dermody, assistant to the division manager, South Bend; Robert Andrews, assistant chief clerk, Angola; Nathan Migliore, supervisor of credit and collection, Michigan City; Jack Stine, assistant to the Calumet division manager; Jack Baker, junior auditor; Lee Kenady, industrial relations supervisor, all of Hammond.

Each of the discussion leaders was given an intensive course of instruction over a two-week period at the utility's Michigan City training center. Classes on the art of conducting meetings, public speaking, and moderating a conference headed the study agenda. In addition, the leaders prepared ten to 15 minute introductory talks that were given at each employee class meeting. All talks

were rehearsed with a tape recorder.

So that nothing was overlooked the group practiced with typical questions that might be asked by employees. Each leader was shown how to present the initial course of the A. G. A.-EEI program—principles of customer relations. Then each of the four teams received added training in their particular course specialty. The entire teaching program was under the direction of Eugene Shorb, training director.

Next the program committee printed class schedules which were distributed to all parts of the company's territory. Managers, department heads, and supervisors informed employees of the times and locations of the meetings they were to attend. It was recommended that only about 20 to 25 employees attend each session. The committee believed this would be the ideal number to receive instruction at any one time.

As one committee member put it, "Too many employees does not allow everyone to participate in discussions. On the other hand when the group is too small not enough discussion results. We believe a group of 20 to 25 persons creates a good deal of discussion and allows everyone with a problem or an opinion to make himself heard."

Now let's look at a typical customer relations training session. The scene is a well-lighted and ventilated conference room. At the front of the room is a desk mounted on a two-foot-high platform, a portable silver-screen, and an American flag. Easily read name plates with the full names of the two discussion leaders rest on the desk as well as a pitcher of water and a couple of glasses. To the rear of the room, behind several rows of comfortable chairs, is a strip-film motion picture projector and a portable phonograph. A loudspeaker stands next to the screen.

As employees begin entering the room they are greeted by smooth, semi-classical music especially selected for its restful quality. Smoking is permitted. When everyone is seated, the company's division manager (or district manager, supervisor, department head) explains what will be highlighted at the meeting. He then introduces the two discussion leaders. One of them takes the floor and delivers a 15-minute easy-to-understand talk on one of the five customer relations subjects. The other leader handles the props. The two leaders alternate duties at successive meetings.

Following the introduction the lights dim and a slide film is flashed on the screen. The vivid, clear-cut film—sparked by bits of well placed humor to continually hold the attention of the viewers—lasts slightly more than 20 minutes. After the showing the leader stimulates discussion by asking questions relating to the movie.

Gradually the discussion begins to include problems taken from the experience of the individual employee. It is at this time the leader assumes the role of moderator, weighing the questions and answers brought out by the employees and relating to them the principles of good customer relations. Problems outside the scope of the meeting are tactfully turned aside.

At the end of an hour there is a five-minute break. At the end of two hours the meeting is adjourned. Each employee

(Continued on page 38)

Measuring gas use of appliances

By BUREAU OF STATISTICS

American Gas Association

Knowledge of the average annual consumption of various appliances is one invaluable tool in the development and justification of reasonable gas rates, and determination of cost of service. Forecasts of future load can be made by applying average appliance usage to estimates of future saturations and service facilities can be planned for newly developed territories (particularly when combined with hourly load characteristics). This tool also aids in planning promotion programs advocating sale of appliances, and determining necessary future gas purchase commitments and relative reliance upon peak shaving facilities.

Unfortunately, such data are frequently not available and the results obtained by other utilities in field tests, or by laboratory experiments, may not be valid when applied to an individual company's problem.

Yet any utility can obtain valid results for its own service area in a relatively simple way, at relatively modest expense.

Such a procedure was initially discussed in the 1939 report of the A. G. A. Rate Committee, employing the method of "least squares." While this method is more complicated than the alternative "subtraction" method of deriving average consumption of appliances, it can be solved by anyone with appropriate mathematical training with only a limited amount of difficulty and the attainable results are more accurate.

Frequently the indicated consumption of customers using a range only (for example) varies greatly from the range consumption of customers using other additional appliances. This article is intended to show the application of both methods of deriving average consumption of appliances. The individual company must determine whether improved

accuracy justifies the use of the least squares method in preference to the subtraction method.

The primary step in undertaking a study of this type is the development of a reliable sample, or cross-section, of the company's residential customers. This sample should be developed by random sampling, that is, randomly picking one account out of every specified amount (100, 200 or 300, etc.) depending on the size of the sample necessary to yield reliable results for all of the combinations of appliances which may occur.

A company having a total of 10,000 residential customers, desiring a reliable sample with an error not to exceed three per cent in 95 samples out of 100, would require a sample of 1,000 families. Since the accuracy inherent in samples depends primarily upon the absolute size of the sample, rather than the percentage of the universe sampled, only a slightly larger group would be necessary in a large city. For instance, in a city with 100,000 customers, a properly selected sample of 1,100 would provide identical reliability.

Tables forthcoming

Tables indicating the required sample size with specified reliability limits will be included in a forthcoming article on sampling the utility service area. This sample is subdivided so that customers are grouped together by type of appliances in use with each customer in a given group using exactly the same appliances as every other. Each of these sub-groups, or combinations of appliances, should include at least 25 customers.

In the event the company has very few of the comparatively new gas appliances (dryers, incinerators and air conditioners) connected to its lines, it probably would be advisable to include all of these customers in the sample and randomly pick the balance. Automatic water heaters and side-arm water heaters

should be treated as separate appliances since their consumptions are quite different.

To determine the average annual consumption of all appliances, an analysis of the monthly bills of sample customers is also necessary to obtain the annual average consumption data for each group. The consumption data for each of the sample customers should be examined for irregularities such as: the installation of an additional appliance during the year; the premises vacant part of the year; account misclassified, or any other irregularities which would affect consumption. This information can probably be obtained at the time of the interview by questioning the customer on these points.

Any customer whose record indicates irregularities should be deleted from the sample. The deletion of these few customers should not seriously affect the validity of the resulting average annual consumption because presumably in each of the subdivided groups a sufficient number of customers remain to give a reasonably stable average value. Incidentally, if desired, monthly average consumptions (instead of, or in addition to, annual) can be used for a winter and a summer month, and separate calculations, as described subsequently, will yield winter-summer differential average consumptions.

The following theoretical appliance saturations and annual consumption data are being used to illustrate the application of both the least squares method and the subtraction method of deriving average annual consumption of appliances. While this article states that the sample for an average company should include about 1,000 customers, the theoretical data only includes 375 in an effort to make the calculations less cumbersome and the methods more understandable.

(See Figure 1 on next page)

Combination of gas appliances	No. of customers	Total annual consumption (mcf)	Average annual consumption per customer (mcf)
Range	39	616	15.795
Water heater	45	927	20.600
Range, water heater	109	3,040	27.890
Range, water heater, house heater	67	6,373	95.119
Range, water heater, house heater, refrigerator	55	5,669	103.073
Range, water heater, refrigerator	32	1,164	36.375
Water heater, house heater	28	2,365	84.464
Total	375	20,154	53.744

Figure 1

In applying the two above-mentioned methods of determining the average consumption of appliances, the usage of each appliance shall be designated as follows:

Range —designated as "w"
 Water heater—designated as "x"
 House heater—designated as "y"
 Refrigerator —designated as "z"

Least squares method

From the above data, it is possible to set up equations as follows:

- $616 = 39w + 0x + 0y + 0z$
- $927 = 0w + 45x + 0y + 0z$
- $3,040 = 109w + 109x + 0y + 0z$
- $6,373 = 67w + 67x + 67y + 0z$
- $5,669 = 55w + 55x + 55y + 55z$
- $1,164 = 32w + 32x + 0y + 32z$
- $2,365 = 0w + 28x + 28y + 0z$

These equations are then solved for the values of the unknowns as follows:

Establish the so-called "Normal Equa-

$$\begin{array}{rcl}
 24,024 & = & 1,521w + 0x + 0y + 0z \\
 331,360 & = & 11,881w + 11,881x + 0y + 0z \\
 426,991 & = & 4,489w + 4,489x + 4,489y + 0z \\
 311,795 & = & 3,025w + 3,025x + 3,025y + 3,025z \\
 37,248 & = & 1,024w + 1,024x + 0y + 1,024z
 \end{array}$$

Normal Equation I: $1,131,418 = 21,940w + 20,419x + 7,514y + 4,049z$

Figure 2

tion I" by multiplying all terms of each equation by the respective coefficient of the "w" item, and adding the results, as in Figure 2.

In exactly the same manner "Normal Equation II" is established by multiplying all terms of each of the original equations by the respective coefficients of the "x" item and adding the results. Likewise, "Normal Equations III and IV" are established by using the coefficients of the "y" and "z" items, respectively.

The resulting "Normal Equations" are as follows:

$$\begin{array}{l}
 \text{I } 1,131,418 = \\
 21,940w + 20,419x + 7,514y + 4,049z \\
 \text{II } 1,215,329 = \\
 20,419w + 23,228x + 8,298y + 4,049z \\
 \text{III } 805,006 = \\
 7,514w + 8,298x + 8,298y + 3,025z \\
 \text{IV } 349,043 = \\
 4,049w + 4,049x + 3,025y + 4,049z
 \end{array}$$

These Normal (simultaneous) Equa-

tions are then solved by the usual methods of algebra. Each equation is divided by the coefficient of its own "z" term, resulting in a coefficient of 1 for all the "z" unknowns:

$$\begin{array}{l}
 279.431463 = \\
 5.418622w + 5.042974x + 1.855767y + 1x \\
 300.155345 = \\
 5.042974w + 5.736725x + 2.049395y + 1x \\
 266.117684 = \\
 2.483967w + 2.743140x + 2.743140y + 1x \\
 86.204741 = \\
 1.000000w + 1.000000x + 0.747098y + 1x
 \end{array}$$

These new equations are combined by subtraction, i.e., subtract the second from the first, the third from the second; and the fourth from the third, leaving three equations with three unknowns, the "z" item having been eliminated:

$$\begin{array}{l}
 -20.723882 = \\
 0.375648w - 0.693751x - 0.193628y \\
 34.037661 = \\
 2.559007w + 2.993585x - 0.693745y \\
 179.912943 = \\
 1.483967w + 1.743140x + 1.996042y
 \end{array}$$

In like manner the "y" and "x" items are eliminated resulting in a single equation with only the "w" unknown. Divide each equation by the "y" coefficient:

$$\begin{array}{l}
 107.029365 = \\
 -1.940050w + 3.582906x + 1y \\
 -49.063649 = \\
 -3.688685w - 4.315106x + 1y \\
 90.134848 = \\
 0.743455w + 0.873298x + 1y
 \end{array}$$

Subtract the second from the first and the third from the second, leaving the following two equations:

$$\begin{array}{l}
 156.093014 = 1.748635w + 7.898012x \\
 -139.198497 = -4.432140w - 5.188404x
 \end{array}$$

(Continued on page 38)

Estimate 90 million gas appliances worth \$16.4 billion in use

According to the latest reports by the American Gas Association Bureau of Statistics, the number of gas appliances on utility lines and used by LP-Gas customers is estimated at 90 million, with a reproduction value of \$16.4 billion.

A breakdown of appliances indicates that ranges in use aggregate 30.5 million with a reproduction value, new, of \$5.8 billion. Water heaters aggregate 21 million with a reproduction value of \$2.9 billion. Gas-fired central heating equipment totals 7.5 million, and there are 5.5 million floor and wall furnaces and 20.5 million space heaters in existence. The number of heating units in

use is smaller than the number of LP-Gas plus gas utility customers because of multiple use of floor and wall furnaces and space heating equipment.

According to Servel estimates, 3.5 million gas refrigerators were currently in use with an A. G. A.-estimated reproduction value of \$1 billion. Number of driers in use is estimated at 1.1 million; incinerators, 350,000.

The estimates represent approximations based on historical sales records, approximate saturation data provided by some utilities, and market surveys undertaken in a few scattered areas.

Several Association committees are

currently considering the advisability of a nationwide survey of householders to obtain more accurate data. Such a survey would permit analysis of reasons for customer preferences among various gas appliances and a breakdown of customer acceptance by city size, age group, income category, and geographical division. It could also provide data on the nature of consumer appliance buying intentions and age of existing equipment in use.

Such data would be extremely valuable in directing effective marketing policies, product design, and promotional activities.

How a survey guided Columbia's promotion

How much do utility companies really know about that intangible something that moves the American homemaker to select one type of appliance over another?

Like many other utilities, The Columbia Gas System thought it could give some pretty valid reasons for consumer preferences in appliances. But could anyone be certain those reasons were based on solid facts?

With a business-like look at the competition of electric appliances in their seven-state, mid-Appalachian territory, Columbia's business promotion men decided to go into the matter more thoroughly. What was needed, they concluded, was an opinion survey in each of their three operating Groups.

An opinion survey, it was reasoned, would permit accurate analysis of: 1) the residential gas appliance and heating market; 2) the reasons for selection of present equipment and preferences and plans for future purchases, and 3) trends in gas and electric saturation.

The survey itself was carried out by the marketing and opinion research department of Ketchum, MacLeod and Grove, Inc., a Pittsburgh advertising agency. After many conferences within Columbia and among representatives of Columbia and Ketchum, a questionnaire was developed which provided the maximum amount of information on a relatively concise form.

To pre-test the questionnaire, a pilot survey of 100 interviews was taken. Sev-

eral minor changes were made after the pre-test, and the questionnaire was given a final blessing as to content and length.

The next step entailed the selection of a sample of 4,300 residential customers from the more than 1,250,000 customers served by Columbia companies at retail. It was agreed that a mathematically random sample of all residential customers was required. However, through a method of "cluster" sampling, it was possible to reduce the cost of the survey without sacrificing accuracy.

For competitive reasons, Columbia is not at this time prepared to disclose detailed results of the survey. Something, however, can be told about business promotion and advertising activities since the survey has been analyzed.

Promotion organized

First, it might be well to describe briefly Columbia's business promotion and advertising set-up. Each Group of companies within the System, and each district within each company, maintains an active business promotion program. Dealer contact men conduct sales clinics, distribute promotion material to dealers, arrange for cooking schools for dealers and the general public, set up model home promotions, and in general handle a well-rounded program aimed at pepping up gas appliance sales. (Until about three years ago, Columbia companies sold appliances directly to customers. That policy was abandoned, and an en-

larged dealer program has been substituted.)

Appliance advertising is carried on through newspapers, radio, television, and, to a lesser degree, through other media.

The survey has, to a certain extent, altered Columbia's thinking on all of its promotional and advertising efforts. One especially disconcerting conclusion drawn from the survey was that customers were beginning to attribute to electric appliances those advantages which are outstandingly held by gas.

For example, a surprising number of those surveyed believed that electric ranges are cheaper to operate than gas ranges! Columbia's advertising now carries more emphasis on those qualities of gas appliances which are known to be superior to electric. Ads are stressing low cost of operation and maintenance, better broiling, speed, automatic features, modernity, cleanliness and coolness.

The survey also indicated a weakness in the new home market. To combat the inroads made by electricians in this field, Columbia is inaugurating a plan of selling directly to builders. Under this plan, System companies will sell all base load appliances to accredited builders for installation in new homes only.

Columbia feels this will help get the new home load without jeopardizing dealer relations, as dealers cannot compete in the new home field. Columbia companies will buy gas appliances from

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Sketch of M.I.T.'s solar heated experimental house

Solar energy and the gas industry

By DR. N. K. CHANEY

*Research Consultant
American Gas Association*

1. Solar energy offers no economic competition with conventional fuels at present prices. The large-scale utilization of solar energy in the United States will be a slow and arduous development, its realization being contingent upon two things: (a) substantial improvements in the mechanics and costs of solar energy collection and storage; and (b) substantial increases in the relative costs of conventional fuels.

In his paper on "The Economics of Solar Energy" J. E. Hobson, of Stanford Research Institute, summed up this view as follows: "Too much has been said about the early applications of both atomic and solar energy. It is unlikely that either will radically change conditions in the more industrialized areas or

affect prices of industrial goods and foods."

The remarks of Sir Edward Bullard, director of the National Physical Laboratory, Teddington, England, in his luncheon address were headlined "Scientist Pessimistic About Solar Energy." Sir Edward expressed the opinion that it would be better to "step up the work on nuclear energy now and leave the more expensive processes for later." Also, "America, which has done the most through your alphabetical agencies to develop nuclear and solar energy, probably needs the least. India and Africa are the parts of the world where there is the greatest need for new sources of energy."

Sir Edward suggested, however, that air conditioning presented the most attractive starting point because the demand was greatest exactly when the sun was hottest, hence no storage problems were involved. The roof would collect just about enough energy to cool the

house below it "thus making it comfortable to live, even in places like Texas."

Mr. Hobson devised a new index to indicate the relative attractiveness of solar energy developments for some 18 large cities situated in a broad belt on either side of the equator. He said economic attractiveness of solar energy should be directly proportional to average annual Btu of sunshine per square foot and inversely proportional to the cost of the same Btu in terms of conventional fuels. The index of relative economic attractiveness was thus the ratio of the annual sunshine to the local cost of fuel in that city.

Thus Phoenix, which was one of the cities lying in the equatorial belt as defined by Mr. Hobson, had an exceedingly high rating in sunshine and was one of the least favorable spots of the 18 cities because of the availability of its cheap natural gas.

The present investment costs of col-

lecting solar energy make its general application doubtful even in the arid regions of the Middle East and India because their ability to pay is in inverse ratio to their need. What they need is "cheap power," and solar radiation techniques still have a long way to go before this is achieved. Like oxygen in the air, it is free but getting it in usable form is costly.

Some 28 countries were represented at the Symposium and Solar Exhibition. One of these was an English technical adviser living in Cyprus, who represented an oil rich potentate of the Middle East. The writer asked Mr. Robert Fitzmaurice whether his trip had been profitable and his reply was that he was taking back absolutely nothing of any immediate practical value or utility for his client's country.

2. The present accomplishments in applied solar energy. These are best summarized by the types of equipment demonstrated at the Solar Exhibition at Phoenix. The latter was divided into the following sections:

A. Sunlight measuring devices. Some 12 recording pyheliometers and radiometers were displayed from various universities, The Smithsonian Institute and two industrial companies. These devices enable one to convert solar energy into electrical and chemical equivalents and record the amount, direction and composition available at any given place for solar houses, solar engines or other solar applications.

B. Solar collectors. The two general types are the focussing reflectors and the flat plate black box collectors.

There was spirited controversy at the Symposium as to the relative merits of these two types. Some experts as Dr. Hottel of the Massachusetts Institute of Technology asserted that the flat type was the most economical, while Dr. Abbott, of The Smithsonian Institution, and the French delegation supported the focussing types. Both sides, however, agreed that neither type was cheap enough at present (flat type collectors cost about \$3.00 per square foot), but each argued that mass production would bring substantially lower prices.

The problem to them was how to get a mass market. (In the writer's opinion, a latent demand will develop only when the cost of conventional fuels rises sharply enough to warrant substi-

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This informal report on solar energy developments, particularly as they may affect the gas industry, is illustrative of much of the quiet work done by A. G. A.'s research staff at headquarters. Primarily concerned with coordinating and directing PAR research projects, the staff working with T. L. Robey also attempts to keep up with developments in more distant but related fields.

Dr. Chaney's observations were originally written for the information of the members of A. G. A. committees on gas production research and atomic energy. Because of growing popular interest in solar energy, it was felt that the report would be of interest and value to a wider circle of gas industry people.

Dr. Newcomb K. Chaney joined A. G. A. in 1946 as research consultant through a special arrangement with United Gas Improvement Company of Philadelphia, where he was director of research. Ten years later, he still commutes several days a week to New York from a home near Philadelphia that he insists lives up to its rustic address—Possum Hollow Road, Rose Valley, Wallingford. He is still retained as a consultant for UGI.

When Dr. Chaney came to UGI in 1934 he had already compiled a record of scientific accomplishment. He was a pioneer in the development of activated carbon and was the first man to measure the temperature of the carbon arc and establish it as a primary radiation standard.

At UGI, his first interest was in developing by-products of gas manufacturing. With such men as Edwin L. Hall, E. H. Smoker, A. L. Ward, F. J. Soday and W. D. McElroy, he was on a research team that played a leading role in developing new processes of gas production and petrochemistry. Within a few years he had attained stature in the gas industry that equaled his previous standing in the field of industrial carbon.

In 1939 Dr. Chaney was awarded the Howard N. Potts Gold Medal of the Franklin Institute given for distinguished work in science or the mechanic arts. The citation was for "original and successful work in the hitherto uncharted field of carbon activation."

During 1940, the Sesquicentennial Year of the American patent system, the National Association of Manufacturers appointed a science committee headed by Dr. Karl Compton to choose those



Dr. Newcomb K. Chaney

scientists worthy of the designation "A Modern Pioneer on the Frontier of American Industry." At that time Dr. Chaney already had more than 50 U. S. patents and was among those scientists of the past 20 years chosen for the award.

The citation which Dr. Chaney cherishes most, however, was from the Chemical Warfare Service of the War Department and was received at the end of World War I. Signed by Dr. Arthur B. Lamb, for many years director of the Harvard Chemical Laboratory and editor of the *American Chemical Journal*, the citation reads in part:

"The absorbent which has saved the lives of thousands of our soldiers, which has postponed defeat, and made victory possible, represents your ideas and your efforts. You are to be envied the feeling of gratification which this fact must give you."

Curiously enough, these same inventions which protected the soldiers of World War I against gas warfare also played an important role in World War II. The entire U. S. productive capacity for chemical solvents needed in the manufacture of TNT was about one-tenth of that actually required and used. The deficiency was made up by the use of industrial systems of solvent recovery based on activated carbon first developed by Dr. Chaney.

The American Gas Association and the gas industry can congratulate itself for the good fortune of having the resources of a man like Dr. Chaney at its service.—Editor

Food for most of the Dallas hotel's 3,000 guests and employees is prepared in the main kitchen with the aid of large groups of gas ranges



Gas is used throughout the completely air conditioned, luxurious Statler Hilton Hotel

King-size aluminum steam kettles are used for soups, stews. Gas fuels these mammoth cookers which accommodate up to 12 turkeys at one time



Lone Star estimates new \$16,000,000 hotel will use 212,000,000 cubic feet of gas annually for comfort and feeding of guests

Gas air conditions new Dallas hotel

Natural gas plays a major role in the mammoth service operation carried on for the comfort and convenience of guests at the smart new Statler Hilton Hotel in Dallas. From top to bottom and throughout every area of the stately 20-story structure, gas is an ever-present servant, providing year-round air conditioning, cooking, hot water, laundry and numerous other needs on a 24-hour schedule.

A year-round gas air conditioning system with cooling capacity equivalent to melting 2,800,000 pounds of ice every 24 hours provides "man-made" climate throughout the new hotel. Individual control units in each of the 1,001 guest rooms permit selection of temperature desired. Temperature and moisture content is also thermostatically controlled in dining rooms, restaurants, meeting rooms, shops, stores and employee locker rooms to produce the comfort conditions required at any given time by the occupants.

The engine room, kitchens and basement laundry are also comfort condi-

tioned. Intakes pull in filtered fresh outside air which is circulated throughout the areas and removed by mammoth exhaust fans. The fans remove excess heat and food odors which might emanate from the kitchens.

Approximately 1,400 tons of air conditioning capacity are required for the summer cooling of hotel guests, employees and personnel and customers in the stores and shops.

Heart of the air conditioning system is comprised of the two 753-horsepower steam turbine-driven centrifugal refrigeration machines which produce the cooling effect for the entire air conditioned area. Two giant pumps circulate chilled water throughout the hotel to produce the necessary cooling results. The air-conditioning cooling tower is located on the hotel roof. The tower is 20 feet high, 27 feet wide, 50 feet long and will cool 5,200 gallons of water a minute.

More than 100 pieces of equipment—directly gas-fired or operated by gas-generated steam—are contained in the hotel basement, kitchens, bake shop and laundry. They range from mam-

moth boilers to deep-fat fryers and from clothes dryers to bread toasters. A giant gas incinerator in the basement burns all combustible trash accumulated in the hotel.

Lone Star Gas Co., which furnishes fuel to the building, estimates the hotel will consume 205,000,000 cubic feet of gas annually in generating steam for air conditioning, heating and hot water. An additional 7,000,000 cubic feet of gas will be used each year for vast cooking operations in kitchens and bake shop where food is prepared for guests and employees. These culinary centers are equipped with some 80 gas or gas-generated steam units which cook food, sterilize dishes and utensils, and retain heat in foods ready to be served.

The \$16,000,000 hotel can serve food to approximately 3,000 guests and employees at one sitting in the numerous dining areas and function rooms. Additional hundreds of meals are delivered to guests each day through the hotel's room service, one of the busiest phases of the food and beverage department.

The Statler Hilton operates three kitchens where sparkling gas appliances with automatic features match the spick-and-span appearance of several hundred culinary experts under the direction of Head Chef Anthony L. Cominotto. The main kitchen services the Coffee House, the Empire Room, the Grill and room service meals.

A second kitchen prepares food served in the Grand Ballroom, the Embassy Ballroom and five function rooms named the Blue Bonnet Room, the Mustang Room, the Silver Room, the Gold Room and El Corralito. The third kitchen services a cafeteria made available by the hotel for the exclusive use of its staff of 1,000 employees.

The main kitchen, where most of the food is prepared, covers approximately 11,000 square feet. To handle cooking chores in this kitchen, batteries of gas ranges turn out general-purpose cooking on top of the stoves.

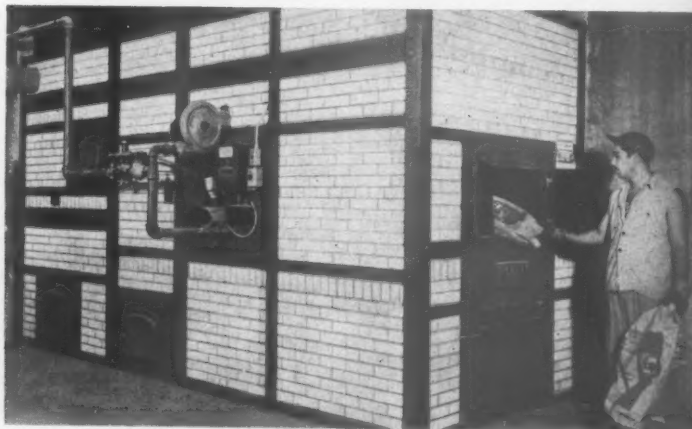
Broilers put a live flame to steaks, chops and fish to bring out flavor. A combination charcoal and gas broiler

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Seven rotating vats with wash water up to 130 degrees perform the washing chore. Clothes go through steam-generated gas dryers, are ironed by mangles

Dishes are thoroughly cleaned and sterilized by gas-generated steam at a minimum of 180 degrees, and dried by steam-heated air pouring over them



A giant gas incinerator burns all accumulated trash. The hotel contains over 100 pieces of equipment that are gas-fired or run by gas-generated steam

Equipment in the bake shop adjoining the main kitchen includes three double-deck gas ovens, a triple-deck steamer, a deep-fat fryer, gas "proof" oven





Joseph Ondrey (center), Pittsburgh physics teacher, reviews with his students some of the details of an experiment outlined in one of American Gas Association's educational booklets, "Experiments with Gas"



Equitable Gas Company's G. M. Smith addresses a general assembly group at Ursuline Academy prior to the presentation of a film about gas industry. A question and answer period followed motion picture



Student group on experimental gets chance to see rotary

*Three gas companies join forces to bring
A.G.A. "Science in Action" educational program to high
school students, teachers in service area*

Pittsburgh students learn about gas industry

The three natural gas companies serving the Greater Pittsburgh area—Equitable Gas Co., Manufacturers Light & Heat Co., and Peoples Natural Gas Co.—are rolling along in high gear on the American Gas Association educational program of acquainting teachers and students with the modern role of gas and gas appliances.

It is obvious that no such program could succeed or even get underway without the support of management. This support is evident in all three companies from top executives to the personnel engaged in the field work. That they believe in the value of educating the businessmen and housewives of tomorrow in the place of gas in industry and everyday life is a fact faced with action—not lip service.

In 1954 the "Science in Action" program by the natural gas companies of Pittsburgh was accepted by leading school authorities. Much ground work had to be done to convince teachers of



Students prepared for the trip by reading books and seeing movies about gas



Physics students learned about the inside workings of a compressor station during an experiment field trip. Space limitations enabled only selected students to go since the response was unexpectedly high



Students in the process of conducting a "Science in Action" experiment are supervised by their physics teacher, Joseph Ondrey (left) and Paul Koechel (right), supervisor of public relations at Equitable Gas

the value of the educational material and to insure the use of the material in the schools after it was given to them.

How the gas companies of Pittsburgh worked to insure the success of the program, and what has been done thus far meant a lot of public relations work.

The first step was to organize the program. A committee was set up consisting of Flora Dowler, chairman, Manufacturers Light and Heat Co.; Paul Koechel, Equitable Gas Co.; and Arthur Maust, Peoples Natural Gas Company.

As step two, the program and its objectives were presented to the Board of Education of the City of Pittsburgh, the Allegheny and surrounding counties' school boards, and the Diocesan Board of Education of Pittsburgh.

The Pittsburgh board accepted the plan and ordered materials for each of their junior and senior high school classes in general science, physics, and chemistry. The material, when received from A. G. A., was packaged by the

gas companies according to school and teacher, and sent to the school board for distribution as they requested. The county and diocesan boards also accepted the program and granted permission to the gas companies to present the plan to their individual schools. This meant that any working program in the schools themselves would have to be approved by the schools.

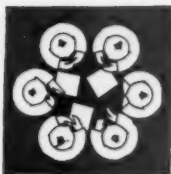
Next each member of the committee was made responsible for contacting the schools on his company's lines. Schools involved totaled 500. Science teachers and principals of the schools were contacted and sample materials were shown and discussed. All agreed that the gas industry materials had a place in the science classes; many teachers expressed enthusiasm on using the experiments as part of their curriculum. Requested material was personally delivered to the schools.

A strong point in favor of the entire program is worth remembering. The

books were written in a scholarly manner by Elbert Weaver, a science teacher himself, whom the school people knew, and the booklets were not tainted with commercialism. In fact, some members of school boards admitted frankly that they had been prepared to turn down the program, but their minds had been changed after seeing the material which was written specifically for classroom use.

Not all schools have been contacted thus far on their acceptance of the program and ordering of materials. However, Pittsburgh schools have asked for a total of 27,190 different items including kits, appliance and science principle books, wall charts, and "The Story of Gas." These figures do not include student work sheets and demonstration meters.

The *Experiments with Gas* and *Advanced Experiments with Gas* books are supplied on the basis of one per
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Industrial relations round-table

Prepared by
A. G. A. Personnel Committee

Edited by **W. T. Simmons**

Assistant to the Personnel Manager
Philadelphia Electric Company

● **Employer rights in secondary boycotts**—Will the law protect you? You can be sure by reviewing an interesting pamphlet which clearly discusses the problem, including the loopholes in the law, how the employer should petition for relief, and where to do so. To obtain this information, request a copy of "Employer Rights in Secondary Boycotts" from the Labor Relations and Legal Department, Chamber of Commerce of the United States, Washington 6, D. C.

● **Spotlight on newcomers**—Here's a way to get oldsters in your plant to help show new employees the ropes: Have probationary employees wear distinguishing identification.

At Armco Steel Corporation, Middletown, Ohio, it's a white cap. At Weirton Steel Company, Weirton, W. Va., it's a big orange badge. Both companies publicize the idea in their employee newspapers. Emphasis is on learning safety. But Weirton also advises "a new man needs help and advice from older employees in learning quality production."

● **Credit where it's due**—The Moore Business Forms, Inc., Niagara Falls, N. Y., announced a recent salary boost by publishing a four-page cartoon booklet for its employees. They called it "The Story of the Golden Goose." The text points out that Moore's golden goose keeps on laying golden eggs because all employees take good care of her. They keep their goose laying golden eggs by giving the best of their skill and knowledge to the job.

● **"Best sellers"**—Books most frequently borrowed from General Foods Corporation's Management Development Library (Battle Creek) may give some self-help ideas:

How to Develop Your Thinking Ability, Keyes. McGraw-Hill Publishing Company.

How to Talk with People, Lee. Harper & Brothers.

How to Win a Sales Argument, Borden & Busse. Harper & Brothers.

Language in Thought and Action, Mayakawa. Harcourt, Brace & Company.

People in Quandaries, Johnson. Harper & Brothers.

Live and Let Live, Kraines & Thetford. The MacMillan Company.

Be Your Real Self, Fink. Simon & Schuster, Inc.

● **Screening for honesty**—There's no need now to make job applicants take a lie-detector test. A new employment questionnaire provides 116 key questions that indicate the applicant's reliability. That's the claim of the "honesty evaluator," or Reid Report, published by John E. Reid & Associates, 600 South Michigan Ave., Chicago 5.

Form was designed primarily to appraise trustworthiness of applicants for jobs where there is opportunity to steal. It's not intended for persons already on the job. Has limitations in union shops where it's difficult to tell whether a worker will end up in tool crib, stockroom, or shipping department.

Developed by a "lie-detector" expert, form has 158 questions, 42 of which are similar to those on an ordinary employment blank. Its reliability has been checked against 2650 applicants in 48 Chicago area firms. In each case, answers were correlated against follow-up tests made by polygraph lie-detector techniques. Biggest asset is that form is predictive—not merely a means of determining past behavior.

Reid says that the form must be filled out in the presence of one of his examiners, either at your plant or at one of his offices (Chicago, Pittsburgh, San Francisco, and New York). An evaluation can be made the same day. Cost is \$10 per applicant.

● **Industrial films**—"You and Your Money" is a useful employee education film on economics. Uses animated cartoon to show what happens to Bill Greenstuff (the common dollar) as he progresses through economic life. Explains money volume theories, and the trend of prices based on supply and demand. Shows the role of the central banking system in the money supply. Color, sound, 12 min. Available for loan from: Federal Reserve Bank—all branches.

● **Arbitration decision**—*Sidewise transfers not so simple*—If your union contract has a departmental seniority clause, you can't toss it out very easily. But it sure can put a crimp in sidewise transfers. If your contract does not have such a clause, and a demand for one is made, here's one reason for resisting it. It's straight out of the case files of the Lewisburg Chair Company (Connecticut).

Lewisburg assembles dinette sets. One of the workers was a displaced Czechoslovakian cabinet maker who had taken the job of press operator because he couldn't find a job in his trade. Recently, Lewisburg thought it might be a good idea to make table tops. It had another good thought! Why not transfer this man to the new work—where he would use his skill and get the same money.

It was a good idea—until the union heard about it! The union argued that the worker was not hired as a cabinet worker. It also argued that the contract provided for depart-

mental seniority. A worker had a right to choose his job, it said; and this man could stay in his own department where he was senior. So the case went to arbitration. The arbitrator looked high and low in the contract for a departmental seniority clause, but couldn't find one. Instead, he fastened his eyes on the management rights clause and said: The right to direct the working force means the right to transfer workers as operations demand. Seniority was plant-wide. No employee rights were violated. Lewisburg had done the right thing. Case dismissed!

● **Court decision**—*Court approves pension offset*—In a decision with far-reaching implications, a federal district court in Illinois supports the practice of the Bell System's telephone companies and other affiliates of offsetting against employee pensions half the benefits they derive from Social Security. The consolidated case brought into the Federal District Court for Northern Illinois involves retirees of Illinois Bell Telephone Co., Western Electric Co., and American Telephone and Telegraph Company.

The retired employees asserted that technicalities of the Social Security Act forbid the offset, particularly in connection with later amendments of the Bell System plan when the offset was increased along with the increased benefits under the statute.

The court does not agree. It points out that the Bell System instituted its pension plan in 1913, long before the advent of Social Security, and that it had the same aim as the Social Security Act—to provide that retirees would not become public charges. Secondly, the court notes, application of the offset provisions does not deprive the charging parties of their benefits under Social Security. As to the offset itself, the court says retirees did not become entitled to an irrevocable sum of money when they became entitled to pensions under the Bell System plan.

● **NLRB ruling**—*Resignations from union upheld and dues refunded*—Ruling that employees may resign from a union at the end of the contractual term of a maintenance-of-membership agreement, the National Labor Relations Board says that neither the possibility that the contract was extended on a day-to-day basis nor the union's constitution may offset the validity of the resignations.

The question of validity of resignation of three employees arose at the Marlin Rockwell Corp., Plainville, Conn., where Local 197 of CIO's United Auto Workers has held two successive maintenance-of-membership contracts since 1950.

The three employees gave the union withdrawal notices in September, 1953, at about the time of termination date written in the first agreement. The second agreement, also containing a maintenance-of-membership

(Continued on page 55)

Cost and the utility business

● Facing up to cost problems in business will be an important topic at the A. G. A. General Management Section's Spring Conference in April. In this article the author suggests one area in which a new look could materially improve the cost, and hence the profit, picture for the gas utility industry. Mr. Butler has adapted some of this material from articles appearing in "Fortune" and uses it with the permission of the copyright owner, Time, Inc.—Editor

Why, daddy?" "Do I have to?" These are questions usually heard by parents of small youngsters. More than likely many gas company managements are asking themselves similar questions. "Why can't we do this (or that) in a more efficient way?" . . . "Do we have to spend so much money to get the job done?"

Today, more than ever before, there is self-analysis of construction and operation methods within the gas industry by individual companies and through American Gas Association activities. Managements are fully aware of increasing labor costs with \$4,300 the current annual average income per family after taxes, and the prospect is that by 1980 this will become \$6,600, in 1953 dollars, even though the average work week will have decreased by 14 per cent.

With the probability of increased labor cost there is the significant fact that during the past 25 years the average American reduced his work hours 15 per cent but has increased his purchasing power roughly 50 per cent. This remarkable advance is almost entirely a result of the fact that national productivity in average output per man-hour has increased more than two per cent a year since 1930. Evidence indicates this trend will continue.

Another very significant trend during the past 25 years is the 200 per cent increase in output per man-hour in production industries compared with *only* a 50 per cent increase in distribution companies.

Some industries will not be able to or just will not improve their productivity as much as the national average improves. Since it is a fact that wage rates stand to rise, even though there is no increase in productivity, these industries will find themselves burdened with

steadily higher costs. The gas industry will be forced to become far more efficient than it is now as manpower becomes more expensive.

Years ago researchers of a large corporation found that any change improved productivity, apparently because it wrenched workers out of their habit pattern. So it is with management, and with business policy. The very process of change, because it necessitates searching examination, provides its own reward.

Most of this industry now distributes natural gas from the Gulf states, but specifications of material and equipment vary. Primarily, this is a carryover from the past, when each company made its own gas and was not too much concerned how other gas companies operated.

Managements of many gas companies, in this sixth largest industry in the U.S.A., cannot afford to hire outside business consultants or do not have the manpower available for self-analysis. They are aware of the rather rapid increase in plant investment per customer from \$205 in 1945 to \$293 in 1954. These figures do not include investment in transmission pipelines. It is apparent that some industry-wide review is necessary.

It behooves the management of each gas company to ask itself, "Why do we buy this particular material or equipment . . . why must it have these particular dimensions or size . . . what are we paying in extras . . . what are others using?"

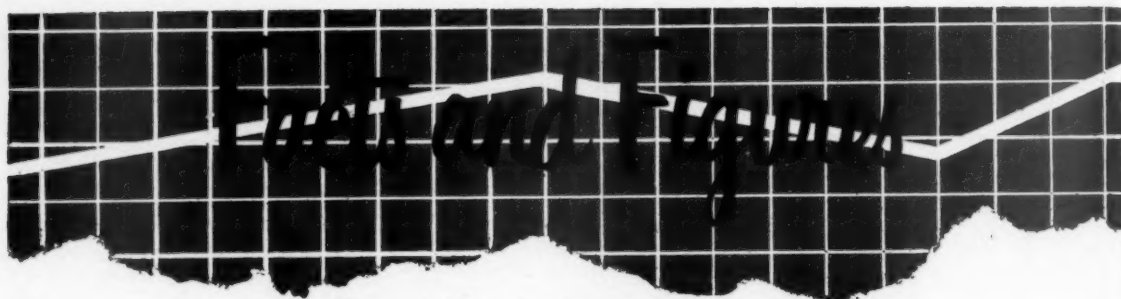
Then, such questions needing industry-wide answers are: "Why does the industry need more than 50 different types of meter connections on which to hang a meter? Why does the industry need more than 10 different sizes in the wing lock stop opening to seal the same stop? Why does the industry continue to custom-build truck bodies to suit local whims when most of them use the same construction and operating equipment?"

It is believed that when these and similar questions are answered by the best minds in the gas industry there will be savings in the cost of material and equipment as well as in construction and operating costs.

The simplest way to make this review is through existing A. G. A. Sections and/or committees. Your interest in this review may be indicated by a letter to A. G. A. Headquarters (Attn. Purchasing & Stores Committee), 420 Lexington Avenue, New York 17, N. Y.



By **PAT H. BUTLER, Jr.**
*Chairman, Standardization
Subcommittee
A. G. A. Purchasing & Stores
Committee*



Prepared by A. G. A. Bureau of Statistics

Shipments of 195,500 automatic gas water heaters during November were 9.2 per cent higher than in November of last year. The November shipments represented the highest total for that month since November 1950 when 206,000 units were shipped. During the first 11 months of 1955, 2,562,800 automatic water heaters were shipped, representing an increase of 21.2 per cent over the same cumulative period in 1954. Estimated shipments for all of 1955 are expected to be 2.8 million units, the best year on record.

Gas range shipments during November totaled 182,000 units, up 4.6 per cent over the same month a year ago. There were 2,101,800 gas ranges shipped during the first 11 months of 1955. This was 11.9 per cent higher than the 1,877,500 units shipped in the first eleven months of 1954. Shipments for all of 1955 are expected to reach 2,250,000 units.

Shipments of 107,300 gas-fired central heating equipment units during November were up 21.9 per cent over shipments made during November 1954. These shipments when broken down by type indicated that a total of 78,200 gas-fired furnaces were shipped during November, up 21.6 per cent over the same month a year ago. Shipments of gas-fired boilers aggregated 7,800 units, up 1.3 per cent, and shipments of gas conversion burners totaled 21,300, up 33.1 per cent. During the first 11 months of 1955 there were 1,068,100 gas-fired central heating units shipped, equivalent to a gain of 19.1 per cent over the first 11 months of 1954 when 896,800 units were shipped.

Housing starts during November declined more than seasonally to the lowest level of the year. There were 90,000 units started in November, down 13.1 per cent from November 1954, and

(Continued on page 56)

SALES OF GAS AND ELECTRIC RESIDENTIAL APPLIANCES DURING NOVEMBER, 1955

(WITH PER CENT CHANGES FROM THE CORRESPONDING PERIOD OF THE PRIOR YEAR)

	November		October		Eleven Months Ending November 30, 1955	
	Units	Per Cent Change	Units	Per Cent Change	Units	Per Cent Change
RANGES						
Gas	182,000	+ 4.6	207,800	+ 5.4	2,101,800	+11.9
Electric	100,900	+11.2	118,400	+22.8	1,339,200	+16.3
WATER HEATERS						
Gas	195,500	+ 9.2	231,200	+14.5	2,562,800	+21.2
Electric	48,300	-15.4	67,900	+ 6.6	827,200	+12.5
GAS HEATING						
Furnaces	78,200	+21.6	92,800	+17.5	782,100	+29.1
Boilers	7,800	+ 1.3	13,600	+15.3	84,900	+11.7
Conversion Burners	21,300	+33.1	43,000	+33.5	201,100	- 6.6
DRYERS						
Gas	50,300	+37.5	45,000	+55.8	326,000	+54.3
Electric	106,900	+ 5.1	121,800	+30.6	896,600	+57.0

GAS SALES TO ULTIMATE CONSUMERS BY UTILITIES AND PIPELINES DURING NOVEMBER

(MILLIONS OF THERMS)

	1955	1954	Per Cent Change
Month of November			
All types of Gas	6,009.0	5,393.0	+11.4
Natural Gas	5,730.2	5,114.8	+12.0
Other Gases	278.8	278.2	+ 0.2
Twelve Months Ending November 30			
All types of Gas	65,774.1	60,621.8	+ 8.5
Natural Gas	62,342.3	57,342.6	+ 8.7
Other Gases	3,431.8	3,279.2	+ 4.7
Index of Monthly Utility Gas Sales (1947-49 = 100)	221.5	198.8	+11.4

PERTINENT BUSINESS INDICATORS, NOVEMBER

(WITH PER CENT CHANGES FROM CORRESPONDING PERIOD OF THE PRIOR YEAR)

	November		Per Cent Change	October		Per Cent Change
	1955	1954		1955	1954	
Industrial activity (1947-49 = 100)	144p	128	+12.5	143	126	+13.5
Consumer prices (1947-49 = 100)	115.0	114.6	+ 0.3	114.9	114.5	+ 0.4
Housing starts, Non-farm (thousands)	90.0	103.6	-13.1	107.0	110.7	- 3.3
New private construction expenditures (\$ million)	2,584	2,358	+ 9.6	2,724	2,420	+12.6
Construction costs (1947-49 = 100)	148.6	141.9	+ 4.7	148.6	141.8	+ 4.8

p Preliminary

Servicemen find the A. G. A. Gas Appliance Service Manual an important part of on-the-job equipment in maintenance of water heaters, dryers, and ranges



Manual reduces repeat calls

By JOHN H. DENNIS

Customer Service Superintendent
Long Island Lighting Company
Mineola, New York

Contemporary studies of distribution disclose that customers regard the servicing of appliances as more important than price, style or any other factor.

An article titled "No-Good Goods" appearing in a recent edition of the *Wall Street Journal* started off with the quotation from a housewife who said, "I've always wondered what happened to that pretty girl in the ad—you know, the one who's about to close the door of her new dishwasher and dash off to the theatre. Did she ever come back to find the machine had dumped the dirty dish water all over the floor—like I did?"

Typical complaints like the above of America's shiniest products have been steady winds in turning the weather vane of thought on appliance servicing policy.

As a result of these pressures many electric appliance manufacturers are moving toward the centralizing of sales promotion, holding of inventory, and servicing of appliances after sale.

The gas industry has indicated its own feelings regarding the importance of appliance servicing by giving it a prominent position in its program for Gas Industry Development. This program specifically recommends that the gas com-

pany must be in a position to render, upon customer request, prompt, efficient and courteous appliance adjustment and parts replacement service.

Certainly a gas company with an established service policy of this nature will find itself in an excellent position to provide service of an equal or better quality than its electric competitors.

Those companies accepting the responsibility of customer servicing must safeguard against the jeopardizing of their customer relations through this primary contact of serviceman and customer. To the consumer the serviceman is the gas company. If he repeatedly fails so does the fuel and so do future sales of gas equipment. The kind of an impression he creates and the type of service he renders may be the only company reputation that the customer might ever know.

Demands continuous

There are a number of facets to the problem of creating and maintaining good customer relations by the serviceman while on the customer's premises. Certainly one of them is technical competency. In the ever changing appliance industry the educational demands placed on service personnel are continuous. The responsibility for this education lies with the utility itself.

In order to facilitate this educational

process and to aid the serviceman in cataloging information the Gas Appliance Service Manual was developed by the A. G. A. The 400 pages of this manual in a convenient tool bag size of 5 by 8 inches are devoted to the servicing of clothes dryers, ranges and water heaters.

This manual would certainly have fallen short of its intended goal, that of keeping the serviceman up to date, if it appeared as one edition with revisions following years later. The need was for a "live" manual, "live" because it can be purchased and kept up to date with a subscription for supplementary service information supplied every four months on new controls.

The manual has been available for a year now and three of these supplements have already appeared. It is confidently felt that this supplement feature has been responsible for the phenomenal success of the manual. Over 9,500 copies have been sold in the first year.

The manual is basically a functional tool, a service aid designed for field use. Its continued success gives ample testimony to its help in reducing repeat calls caused by the guess and trial procedures of a serviceman who just can't remember it all.

The impression left by adequate service performed in one call is of immeasurable value to the company.

Unfortunately the gas company does



Long Island Lighting instructor uses booklet to explain the function of the warp switch. The booklet is divided into sections for dryers, water heaters, ranges



Serviceman makes use of manual's instructions for calibrating thermostat. Booklet's ring binders allow pages to be added for new appliances

not receive all the service calls within its territory and in those companies which have no service policy this responsibility falls on the plumber-dealers in that area. With this in mind the Gas Industry Development Program urges an active Plumber-Dealer Training Program. Many gas companies have found it profitable to assist manufacturers in training plumber personnel in the proper installation and servicing of appliances.

A surprisingly large number of orders for the manual have been made with the

intention of using it during the training of plumber-dealers and of supplying them with copies after that course.

One Canadian company has been particularly enthusiastic over the use of the manual for this purpose and has re-ordered so as to prepare for a new class.

Another company has adopted the policy of supplying the manual to plumber-dealers with the recommendation that they themselves subscribe for the supplement service.

The new Gas Appliance Service Man-

ual for clothes dryers, ranges and water heaters is the work of the Joint A. G. A. GAMA Committee on Gas Appliance Service Manuals.

The new policies of this committee will soon bring forth such much needed volumes as a heating manual, a commercial kitchens manual and a general utilization manual.

It is the hope of the committee that the future books will be as useful as our present manual, which has proved satisfactory to our members.

Pittsburgh PEP campaign best yet, companies say

THE THREE natural gas companies of Pittsburgh—Equitable Gas Co., Manufacturers Light and Heat Co., and Peoples Natural Gas Co.—have announced that their annual PEP campaign was the best one yet. Sixteen restaurant supply dealers in the Pittsburgh area

participated in the 90-day campaign and sold a total of 682 new commercial cooking appliances. This compares with 429 new installations during the 1954 campaign. New equipment installed included new gas fryers to replace electric ones less than two years old in

a well known steak house and a restaurant specializing in sea food. Top winner in the campaign was Ed Mellon, owner of the American Equipment Co., and a newcomer in the business. He was credited with 60,200 points. Herb Solomon, Bernard Ress Co., was next

Study SMU appliance installations re Hotpoint article

J. M. LYNN JR., promotion manager, Lone Star Gas Co., has conducted a thorough investigation of appliance installations at the new Humphrey Lee student center at Dallas' Southern Methodist University, in connection with a recent article in Hotpoint Company's November 1955 *Commercial Current Events*.

The investigation made at the request of Lone Star Senior Vice-President Chester L. May was conducted because from reading the four-picture article in the Hotpoint magazine one might infer that the student center was all-electric. This is particularly disturbing because of the gas industry's widespread use of the study made on gas and electric cooking

costs in SMU's Virginia and Atkins Halls.

Mr. Lynn's report reveals that the major share of the equipment in the center's main kitchen is gas-fired. The report further states that since the SMU test was made, the three sections of electric ranges used in the test have been replaced with three sections of heavy-duty gas ranges. Report results are as follows:

Gas Equipment—Heavy-duty gas ranges: three sections Model 45-29 solid top Garland ranges with ovens below; two sections Model 47-29 fry top with ovens below; one section Model 44-29 with oven below. Total is six.

Heavy-duty gas ovens: two Model 902 Blodgett roasting ovens, two 12-inch decks

each; two Model 982 Blodgett bake ovens, four seven-inch decks each. Total is four heavy-duty ovens, 12 decks.

Electric Equipment—Three deep fat fryers; two broilers; one bake oven.

One of the two electric broilers is installed on top of the other. Consequently, the two broilers occupy the same floor space as would one gas broiler. According to Mr. Lynn, if space had not been the determining factor, gas broilers would have been installed.

The report indicates that there is no gas on the second floor of the building, where the coffee shop is situated. In the coffee shop, one electric griddle and one electric fryer are used.

Electronic programming

Two articles discuss steps necessary to prepare for accounting use of computers

I—Programming for an electronic computer



By J. W. BALET

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When electronic equipment for business purposes is discussed, attention is usually centered on the physical characteristics, the performance and the factors involved in selecting a particular type of equipment. Programming may sometimes be included in the discussion but little is said about the large amount

of work that is required before an electronic computer can be applied to an accounting operation. This paper will attempt to fill some of this void.

Programming varies widely in approach and extent, depending upon the business machine that is being programmed. Consequently, in discussing the subject the kind of equipment must be specified. The present discussion is concerned with the programming of large-scale general purpose electronic computers, such as the 705-EDPM and the two UNIVACs that will be delivered to Con Edison during 1956. The company will use the UNIVACs for customer accounting and the 705-EDPM for general accounting and various other company operations.

The large-scale computer has as its central component, a high speed internal memory in which is stored the information to be processed and a series of instructions that will direct the computer through the operations to be performed on the information. Both the information and the instructions are moved into the computer via magnetic tape, and tape is also used for output. Peripheral equipment provides for conversion from punched cards to magnetic tape and from magnetic tape to punched cards, and for printing actuated by magnetic tape.

It is generally agreed that the large-

scale computer with its peripheral equipment can duplicate punched card operations. But beyond this, the computer has three unique characteristics that have a major effect on programming:

(1) Information can be stored indefinitely on magnetic tape; (2) the computer has the ability to make comparisons; and (3) the computer can store within its memory the instructions that it will automatically follow in processing information.

The storage of information on a magnetic tape replaces punched cards and other visual forms with a record that is stored in serial order on the tape. The tape has the advantage that the record can be compressed into a small space and much of the duplication of information that is inherent in punched card systems can be eliminated. However, the information is stored on the tape as magnetic bits, and hence is invisible.

In making comparisons, the computer matches two quantities and depending upon whether they are equal, greater than or less than one another, follows entirely different paths for subsequent operations. This capacity for making comparisons is generally known as the logical ability of the computer. Because of it, computer operations can be extended into clerical functions that were formerly believed to be too complex for machine methods.

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The third unique characteristic of the computer, namely, the storage of instructions in its memory, makes the computer fully automatic in processing data and also permits a choice of different operations as a result of the comparisons.

These three characteristics: the use of magnetic tape, the ability to make comparisons and the internally stored programs are among the factors that give the electronic computer its high speed and tremendous flexibility. However, these same characteristics make the programming of a computer extremely difficult.

In the glossary of the Association for Computing Machinery, programming is described as the planning of:

"A computational process from the asking of a question to the delivery of the results, including the integration of the operation into the existing system. Thus, programming consists of planning and coding, including numerical analysis, systems analysis, specification of printing formats, and any other functions necessary to the integration of a computer in a system."

This definition is so condensed that it does not adequately describe programming to people who must organize and direct it.

To indicate the scope of programming, some of the steps involved will be described. The purpose is to outline the form that programming takes rather than to describe the process that is being programmed. For this reason, although reference is made at times to the actual programming of the Con Edison payroll for the 705-EDPM, the details of the payroll process will not be explained.

Step 1. The Balloon Chart. The balloon chart gets its name from the circles which are used in the chart to represent magnetic tapes. A rectangle represents the computer, and arrows pointing from the circles to the rectangle mean that information is being read into the computer from magnetic tapes, while arrows pointing out represent information being read out of the computer on to tapes.

The balloon chart is the starting point of programming and is the simplest representation of a computer operation. It merely outlines the number of tape units that must be connected to the computer and presents a general picture of what information is to be processed. To a large extent, the balloon chart is the connecting link between the system design of the accounting procedure that is to be

programmed and the more detailed programming that follows.

Step 2. The Master File. The master file contains the basic information necessary for the payroll operation, such as the employee's name, his number, title, rate of pay, etc. This information is spread along a magnetic tape in serial form, the items for each employee following one another and the record of one employee being similar, except for content, to the record of any other.

The greatest possible compression of the master file is desirable for two reasons: (1) the capacity of the computer's internal memory is limited and as much of this capacity as possible should be reserved for other phases of programming; and (2) since all the information in the master file must pass through the computer, whether or not it is to be processed, the shorter the master file the less is the time required for computer operation.

The design of the master file is further complicated by the fact that the exact location on the tape of each piece of information, down to the last character, must be known and completely described by the program.

Step 3. The Flow Chart. This diagram is variously referred to as a flow chart, a block diagram, or a logical design. It is at this point that top programming skill is required. A system design for the particular accounting procedure which is generally outlined by the balloon chart must be reduced to three basic operations of the computer:

(1) arithmetic computation; (2) movement of information within the computer system; and (3) the making of comparisons.

Every accounting procedure that is to be processed by the computer must be broken down into steps that will fit into these basic operations.

The flow chart of an accounting procedure is usually lengthy and involved. Every last detail of the accounting procedure must be pin-pointed and provided for. There must be no omissions since the computer has no independent judgment and will not even indicate when a step is missing.

Step 4. Coding. Every general purpose computer has a set of instructions which, when placed in the memory of the computer, directs the computer through the

operations it is to perform. A large computer will have somewhere between 30 to 50 different instructions which cause the computer to perform several variations of each of the three basic operations: arithmetic computation, movement of information, and comparison.

The writing of the individual instructions is known as coding. Coding is done from the flow chart and the operations outlined by the chart must be fully described by the individual instructions to the computer. The number of instructions included in the complete payroll program runs into the thousands.

The ultimate test of programming is that the instructions will enable the computer to perform the specified operations. Hence, it is mandatory that the instructions of the programs be thoroughly tested on a computer before an accounting procedure can be converted to computer operation. This testing is generally known as "de-bugging" and is a measure of how good or bad the programming really is.

Step 5. The Print-out. One important aspect of programming stems from the necessity of providing visual records. The invisible information on the tape must be translated on to a printed page, either for permanence or to provide the means of ready reference to the information. The preparation for these so-called print-outs is a major task in the programming procedure.

For example, the print-out of the payroll register is greatly expanded compared to that of the punched card system. Thus, much of the vital information contained in the payroll master file becomes visible and permanent.

Accompanying the programming and part of it, is a series of related tasks. The accounting procedure must be completely analyzed, the new accounting system for the computer must be designed, procedures must be written, and forms and cards must be prepared. None of these will be discussed, but the sketchy description so far presented should indicate how difficult and laborious programming is. Yet the entire process must be done thoroughly because the success of the computer installation will depend on the skill with which the programming is done.

The preparation of Con Edison's payroll for a 705-EDPM is an example of
(Continued on page 40)

II—Accounting system design problems



F. J. PORTER, JR.

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Most of the literature on the use of electronic computers for basic business problems stresses the importance of programming but fails to define exactly what is meant by this term. It is used by some to refer only to the analyzing, charting and coding of procedures and by others to include also the basic design of the accounting system to be applied to the computer. For our purposes, we shall use the first definition and will consider the problem of accounting system design as a separate and distinct operation in itself.

We do this because our experience indicates that we have underestimated the importance and difficulty of the accounting system design problem particularly in commercial operations with its many related procedures. More time and effort than we originally thought necessary is being put into this area of computer application and I would like to tell you about some of the basic problems which we have encountered and what we have done to solve them.

When we first started to design our accounting system for computer application, the general belief not only in

our company but among others with whom we discussed it, was that a complete rethinking of the accounting problem was necessary. Computers were believed to be so different from anything we had heretofore used, that totally new concepts of accounting would be necessary to use them effectively. The more we studied the problem, however, the more we came to believe that rethinking was not only unnecessary but actually undesirable, at least in the beginning.

Two reasons seemed to be important. First, the time required to do a thorough rethinking job appeared to be considerable because not only did we have to decide what we wanted to change and how, but then had to gain acceptance of completely new concepts by our organization. The savings we could make by merely adapting computers to our present procedures appeared to be sufficiently large so that we did not wish to delay their realization any longer than necessary. The additional savings from complete rethinking might not be sufficient to compensate us for the time delay in realizing them.

In new field

Second, we lacked experience with electronic equipment. We felt we ought to creep before we tried to walk. No one in the utility industry had ever used this new computer equipment for either payroll or customer accounting and we knew there would be many knotty problems encountered in adapting our present systems without revolutionary concepts being added.

Therefore, we decided not to revise our accounting systems completely, but rather chose to apply our computers to our systems as they exist today, making only such modifications as were necessary because of the inherent characteristics of computers and related equipment, and any other minor changes which were obviously desirable and easy of accomplishment.

It is our intention, once we are in operation and have acquired a little experience, to review our accounting system design carefully to see whether a thorough revision is then justified. We believe this is the better approach

to the rethinking problem.

A problem which is mentioned frequently in discussions on computer applications is the need to re-align the organizational structure of the company to obtain the greatest economy through complete centralization of operations and greatest possible volume of transactions. Fortunately, in Con Edison we were sufficiently well centralized so that little revision of organizational structure was needed.

Furthermore, volume was not a problem with us either. We did encounter difficulty however, in changing some procedures affecting long established policies. For example, because of historical reasons, we have different sick benefit deductions in two different divisions of the company. To make these alike would require the revision of the constitutions of the respective Mutual Aid Associations and might require bargaining with the union. The advantages of uniformity did not seem to justify this effort.

Centralization, at least from a theoretical point of view, will produce the greatest economy under computer operation. We believe, however, that it has some practical problems which must be weighed. It may well run into resistance based on long established lines of authority and organizational sacred cows. Scheduling problems may be quite severe. Must the computer be used for payroll first to get out checks or are bills more important? When will inventory be done and will general accounting be set aside for all three? If a complete reorganization is necessary to justify the computer installation economically you may well wish to look carefully at the desirability of adopting computers at all.

Under digital computer operation, the basic accounting records, of course, are retained on magnetic tape. These are the customer history file in customer accounting and the payroll roster file in payroll. A very fundamental problem encountered early in designing the accounting system is the format of these basic files.

What data are to be retained in the file? How many digits or characters of file space per customer or per employee are needed? In what order will data be organized within the file? Will

* Presented before the New York State Public Utilities Executives Conference, Sept. 9, 1955.

space be provided on every account for every possible condition or will some method of varying the size of the record with the customer or employee be adopted?

These are not easy questions to answer. Only after months of study, have we now arrived at a firm determination of many of them and if we have the same experience as did another utility working on this same problem, we shall be making minor changes in the organization of our history files almost up to the time of initial operation.

There are several basic considerations which must be weighed carefully in solving this problem. Unfortunately they are somewhat conflicting. First, the less information a file contains the lower will be the cost of computer operation, because these costs in many respects are in direct relation to the size of the master file.

On the other hand, these files should contain all the data necessary to carry on many of our business operations, such as preparing bills and pay statements, collecting amounts due, answering questions and maintaining the many records and reports needed by management or required by governmental agencies.

The balancing of this cost factor against the desirability of data calls for thought and careful judgment. Further experience may enable us to reduce this to more of a formula than we have been able to develop so far, but at the moment we are depending on our own best judgment for obtaining the proper balance.

Our general guide has been to lean in the direction of too much data rather than too little in the beginning, feeling that we could eliminate unneeded data easier than we could establish it later when basic records may be no longer available. We also felt that it would be easier for our organization to adjust to computer operation if it had all the data now supplied than if we asked it to get along with less.

The general pattern we have established calls for a maximum of about 500 characters per employee on the payroll roster file tape and an average of the same for each customer on the customer history file tape. Actually each single service customer will have a minimum of 360 characters and a combination service customer 600 char-

acters. Additional characters will be needed on the small percentage of credit risks, mailing addresses, budget accounts and so on. We hope to be able to reduce these quantities when we review our system design later on.

A question closely related to the size of the history file is the frequency with which this file is brought up to date. This is more of a customer accounting problem than payroll as the payroll roster file needs no up-dating between pay periods. Up-dating the customer history file is done by posting cash, meter readings, changes in account data, adjustments and so forth.

Cost enters very clearly into the picture. The file maintenance run takes about one-third of the computer time in customer accounting. It is therefore obvious that any material reduction in the frequency of file maintenance will directly affect the amount of work the computer will be required to turn out and hence the cost. Again the need for carrying on normal business transactions must be balanced against cost.

From a pure accounting standpoint, it is not necessary to up-date the master file any oftener than once each billing cycle. With bi-monthly billing this means only once every two months. Obviously however, this is not frequently enough to give us the information to answer questions and to carry out an effective collection system. So we must decide how frequently we will up-date to give minimum cost and maximum data access.

Use 7-day cycle

In Con Edison we have decided to up-date our customer history file every seven working days, principally because we have a 42 day billing cycle and every seven days gives us six up-datings per cycle. Two other utilities we know of have decided on a five day cycle because their meter reading schedules are based on 40 days. If experience proves it desirable, we could adopt a six day up-dating cycle with seven workings of the master file per bi-monthly period. On the other hand we could use 14 days if we desired.

We feel however, that the seven day cycle is as far as we care to go in the initial installation. It provides a rather convenient collection schedule with a minimum of manual look-up and a maximum of mechanical preparation

of data. It does not delay billing of skipped readings and final bills too long, yet is reasonably economical of computer time. It may well be that this will be one of the areas which will need to be re-examined in the light of experience.

It seems quite clear, however, that no longer is customer information and credit and collection data a mere by-product of the accounting system and therefore available at the incremental cost of reading it off ledgers or meter books. The supplying of these data is now a measurable and appreciable cost. The accountant now can definitely say to the credit and collection man or the customer relations man that he will retain for their use almost anything they want and give it to them in any form they want if they are willing to pay for it.

They must understand, however, that much of it now is maintained for their use alone and not for the needs of the accounting system. This should cause the collection and complaint handling executives to re-examine their requirements in order to justify the costs which the accountants indicate as being incurred by them for this purpose. This undoubtedly will be one of the areas where careful evaluation will show that the cost of obtaining some pieces of information now thought vitally necessary, will not be justified.

Again in Con Edison we have tried to steer a middle course by providing practically everything available now on as reasonable a time basis as we can. This too is a matter of judgment and only time will tell us how good it has been.

Once we have decided what information to keep in our customer history file and how often it is to be corrected, we must then decide how we will make this information permanently and visually available. Data on magnetic tape are invisible and so far no electronic techniques have been developed which can economically perform a random search of magnetic tape.

In Con Edison we decided to make periodic print-outs of the complete customer history file so that information clerks, auditors and others can refer to data visually. These print-outs will be of two types. First will be a complete printing of the master file once each billing cycle. Second, will be the interim printing of all postings to the

master file such as, journal vouchers, turn-ons and turn-offs, cash receipts and so on. By reference to the master file print-out, plus the changes accumulated since that print-out, the information clerk will be able to answer practically any question now answerable from our punch card and meter book data.

As there will be a maximum of six accumulated print-outs (one at the time of each up-dating of the master file) and the bi-monthly reproduction of the master file, the information clerk will have to look in seven places at the most, the average of course being between three and four. Inasmuch as the customer history file will contain a full year's data, the retention of one print-out a year will permit us to have a complete historical record of the account.

It is this print-out requirement which has caused many of us to desire high speed printing devices. For our reports and other normal printing requirements, conventional speeds are adequate but when we are confronted with the need for printing large quantities of data daily, we feel we must have greater speed. In Con Edison's case, print-out will amount to nearly 650,000 120 character lines per day. Conventional equipment is too slow and too expensive for such volumes.

Closely allied to the problem of print-outs is the design of the equipment and organization which is to handle the supply of information from them. For the lack of a better term we are calling them "Information Stations." Each station will be manned by a group of information personnel who can be reached by telephone by anyone in the organization. It will be the responsibility of these information people to supply data from the print-outs when required.

In addition, they will review all incoming documents such as turn-on orders, turn-off orders, journal vouchers, bookkeepers' orders, etc., to verify data and correct any errors before they are prepared for transfer to magnetic tape. The initial accuracy of the data on tape is vitally important to the proper operation of an electronic system and we are going to some lengths to approach as close to 100 per cent as possible.

Each information station will have a fixed number of accounts and a normal personnel. The accounts can be

set up on any basis and in any number desired so long as it is easy to locate the proper station and proper ledger. We expect to have about 63,000 accounts handled by three information clerks per information station. Each station will receive the data from one reel of tape each day. Accounts will be assigned on a cross section basis so that each station covers all parts of a borough. Experience may cause us to modify this plan but it seems to be the most practical at this moment.

It would be possible to continue for a long time discussing other system design problems. The sequencing of changes for posting to the master file is a subject by itself. What is the order in which a piece of cash, a journal voucher and a change of mailing address should be posted to the master file on the same account? We have 60 or 70 different types of such changes and they can occur in almost any combination.

How much provision should be made for the inclusion of all meter and deposit data, thus eliminating duplication of files within the company? How will proper revenue controls be handled, ledgers trial balanced and meter controls maintained? Will we sort data on the computer or use conventional equipment or both? Can we reduce the amount of input keypunching by some form of pre-punched output on errors, investigation orders, etc.? Time limitations obviously prevent further discussion of these problems so we shall close with just one or two comments.

The first has to do with the inter-relationship of programming and accounting system design. This is the old question of which comes first, the hen or the egg. Obviously a procedure cannot be analyzed, charted and coded until we know what it is. On the other hand, design of the system must have some relationship to the characteristics of the equipment available.

In Con Edison we feel that programming and system design go hand in hand. Although the magnitude of the commercial relations problem has caused us to use different groups of people for programming and system design, we are requiring that our staff working on system design be trained programmers. We would also expect the programmers to have a good knowledge of customer accounting.

The last observation I want to make is that system design may well be more universal in its application than programming. Many of the decisions which we have arrived at are just as applicable to other utilities as to Con Edison and it may be that others can benefit from our experience and thinking in this area and we can benefit from theirs.

Programming, however, because it involves the most minute detail, is not as useful to other companies. Rate schedules differ, company policies differ and personal preferences of executives must be considered.

Oldest member

A letter to the American Gas Association from Alten S. Miller, 80 Westcott Road, Princeton, N. J., points out that Arthur Glasgow, whose obituary appeared in last November's MONTHLY, was A. G. A.'s oldest member in years of membership.

Mr. Glasgow joined the American Light Association in October 1887, then became a member of its successor, American Gas Institute. In 1918, he joined A. G. A. when it succeeded to the assets and members of American Gas Institute. That made Mr. Glasgow a member with over two-thirds of a century active standing at the time of his death.

A check of aging records in the A. G. A. library now informs us that the new oldest, continuous, active individual member is the very same author of the letter, Alten S. Miller. Mr. Miller joined in October 1889, and has remained in the organization ever since—for 65 years.

News reports of the trust fund established by Arthur Glasgow indicate that he was perhaps the wealthiest gas industry man in the world. He was one of the founders of Humphreys & Glasgow, Ltd., an engineering firm specializing in design and construction of gas plants, formed in 1892 in London, England. The main part of his multi-million dollar trust fund was bequeathed to medical, religious, and art institutions in Virginia.

The brother of the late authoress, Ellen Glasgow, he was working on his autobiography "Collections of Recollections" at the time of his death, and has provided for its completion.



Plan Section activities as committees meet



One of the Section's newer committees, the Promotional-Educational Committee, met recently to implement the program of contacting colleges and universities to determine in what form they could use A. G. A. promotional materials. The Section has available information letters and school lectures with a technical slant that could easily be adapted to eliminate passages of a promotional nature specifically advertising one brand. It was decided that member companies should contact the colleges and universities in their local areas. Seated at table are (l. to r.): G. E. Matlock, Hatzembuehler, W. E. McWilliams, Lee, G. E. M. K. I. Robinson (chairman), M. A. Combs, Walter, J. V. Hall, and R. A. Modlin. Standing are (l. to r.): Herman Koester Jr., C. L. A. E. Esler, R. C. LeMay, G. F. Duggan, C. M. Jewell, and R. E. Crane. The group meets again on May 1, Flor.



At a two-day meeting held recently in New York, the Industrial Gas Practices Committee started to formulate the code on installation of industrial and commercial gas equipment at the customers' premises. This is the second part of the code on piping; the first part has been published. Seated (l. to r.): L. W. Crump, Ohio Water Heaters; R. C. LeMay, Selas Corporation; Himmelman, Peoples Gas Light & Coke; A. Flanders, Factory Mutual Engineering Division; Campbell, Eclipse Fuel Engineering Company; Cramar, Michigan Consolidated Gas; R. L. Baltimore Gas & Electric. Standing (l. to r.): Chairman E. L. Spanagel, Rochester Gas & Electric; R. A. Modlin, East Ohio Gas; Combs, A. G. A.; J. M. Robertson, West Virginia Natural Gas; F. N. Whittemore, Travelers Insurance; J. M. McCaleb, Columbia Gas Service Corporation; C. G. Segeler of Maryland.

of the suggestions at a recent meeting of the Commercial Processing Committee was to and edit a paper by Harman Boyes on commercial uses of gas water heaters so could be distributed as an information. In the interests of simplification, the Steam Subcommittee was combined with the Water Heating Subcommittee. In addition, a Retail Baking Subcommittee was formed. It was suggested that the direct costs of peel ovens and to produce an information letter on this topic. Attending the meeting were (seated, l. to r.): J. A. G. E. Marble, H. W. Boyes, R. W. Bell, G. A. Gaugler, Committee Chairman D. A. Walling, F. Duggan, Hummel Sapp, M. L. Brad, A. E. Eshenfelder, M. B. Mackay; and (standing, l. to r.): O. M. Heartsill Jr., H. C. Wall, L. Firor, G. F. Walters, and J. W. Vance



An ambitious program was voted upon by the Food Service Equipment Committee at its organizational meeting during Hotel Show week. Among the projects that have since been given approval by the Section Managing Committee are the request for funds to continue the publication of "Flame Facts" on a monthly basis during 1956, and the suggestion that institutional architects and restaurant consultants be included in the present active Chain Contact Program to broaden its usefulness. It was also agreed that increased support be given to "Cooking for Profit." At the request of the Commercial Water Heating Subcommittee, the Food Service Equipment Committee endorsed the proposal that the American Gas Association produce a motion picture on hot water sanitation. Chairman of the committee is James J. Condon, Peoples Gas Light and Coke Company

Recently in this month and continuing throughout the month of April, the commercial water heating installation sales campaign will be in full force. Under the leadership of Joseph N. Betz, the Commercial Water Heating Subcommittee met during Hotel Show week to work out the details of the campaign. It was suggested that the proposed motion picture on hot water sanitation be produced in cooperation with other agencies to reduce the cost per sponsor. Great interest in the campaign has been shown recently, by the attendance of food service operators and other authorities at demonstrations of dishwashing techniques. Seated (l. to r.): J. W. Green, W. E. Green, B. E. Twigg, James Wryt, M. A. MacClurg, R. T. McCrum. Standing (l. to r.): Mr. Betz, H. W. Walter, M. Scott, J. Mayland, J. McKearin, guest, D. Williams





GAS

**HELPS
MARYLAND
SHIPBUILDING
KEEP SHIPS
AT SEA**

a PAR activity

Typical of industrial and commercial advertising conducted under the PAR Program is shipyard view with the gas furnace in the foreground. Directed by PAR's Committee on Industrial and Commercial advertising, similar ads in the nation's leading business and trade press reached a 15-million audience in '55.



The Maryland Shipbuilding & Drydock Company at its Baltimore plant uses Gas for many important applications in its steel ship building and ship repair activities. Gas is used for annealing and heat treating metals, in forming and bending shapes, forging, melting.

In a recent program to increase efficiency and cut production costs, Maryland Shipbuilding installed two new Gas furnaces to prepare plates and angles for shaping. Their Gas-fired angle furnace helps them take part in the construction of the new "twin-tube tunnel" to be built under

Baltimore's harbor. This modern Gas furnace heats 24 foot steel "T" bars which are shaped and welded into circular frames for the giant tunnel tubes.

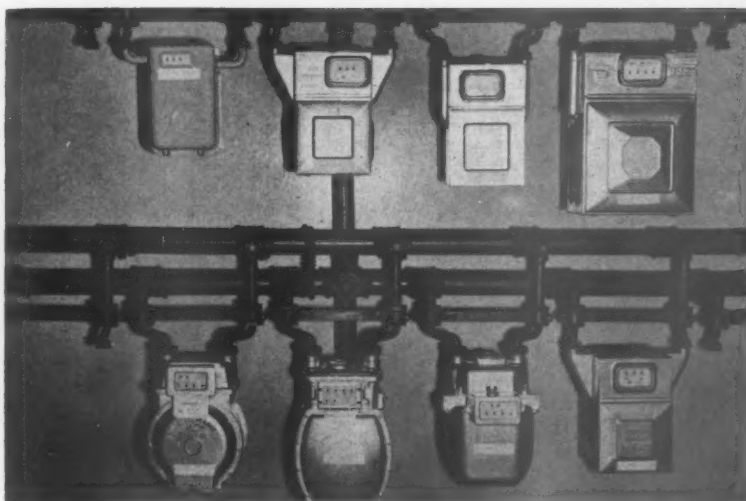
Gas was chosen because of its superior temperature control, lower equipment maintenance, and increased output based on faster heating up and less loss of time in changing from one operating temperature to another.

A discussion of your heat processing problem with your Gas Company's industrial specialist may result in similar increased efficiencies and economies. *American Gas Association.*

Meter survey arouses interest



The use of pallets makes the handling of meters more safe and considerably less expensive



The two depicted displays were arranged by the Task Committee on Standardization of Meter Specifications. The mounting of small capacity meters shows adaptability of various types

Industry-wide recognition of the importance of gas metering is indicated in the results of a questionnaire recently circulated by the Operating Section's Task Committee on Standardization of Meter Purchase Specifications. Of 79 member companies contacted, an almost unprecedented 83.5 per cent responded by furnishing the requested information.

The Task Committee was established in the fall of 1954, upon a request from the A. G. A. Board of Directors that the Operating Section investigate the possibility of establishing specifications for the standardization of small volume gas meters. James Webb, superintendent of the meter

bureau of Consolidated Edison Company of New York, Inc., serves as chairman of the Task Committee, as well as chairman of the Section's Metering Subcommittee. The group consists of seven gas company members and six representatives of meter manufacturers.

Last spring, the Task Committee circulated a questionnaire to 79 representative gas companies requesting information on types of meters used; types of gas served; number of indoor as opposed to outdoor sets; number of house heating customers; and other data which would help the group in its work. The response from 69 companies was unusually high for a ques-

tionnaire of this type and reveals a sincere and wide-spread interest in meter standardization.

A first draft of the Task Committee's "Proposed Specifications" has been prepared and submitted to the groups membership for comments. These were discussed at a meeting in Cincinnati on November 28 and 29 and comments received then will be used as the basis for a second draft which will be analyzed at the group's next meeting in February.

It is expected that a third draft will be prepared in time for submission at the Section's Distribution, Motor Vehicles and Corrosion Conference, scheduled for next May.

Appoint A.G.A. committee heads

Depicted at Dec. 2 A. G. A. board meeting are (seated, l. to r.): W. T. Stevenson, W. F. Rockwell Jr., L. C. Harvey, F. T. Parks, A. W. Conover, R. E. Crawford, D. H. Mitchell, P. E. Beckman, V. T. Miles, C. L. May, C. H. Zachry, E. H. Tollefson; (standing, l. to r.): J. W. West Jr., J. H. Collins Sr., H. L. Whitelaw, L. E. Biemiller, J. H. Carson, E. R. Eberle, D. K. Yorath, B. D. W. Brown, E. C. Sorby, N. B. Bertolette, J. E. Heyke Jr., B. A. McCandless, E. H. Smoker, J. O'Malley, K. R. Boyes, H. Massey, E. L. Hall, W. D. Williams, W. H. Ligon, J. C. Peterson, and C. S. Sackpole. Those seated and standing were inadvertently transposed when this photograph appeared in last month's A. G. A. MONTHLY



Dean H. Mitchell, president, American Gas Association, has announced the appointment of chairmen of various committees of the A. G. A. board of directors. Among the new chairmen named for the 1956 Association year are: R. A. Malony, president, The Bridgeport (Conn.) Gas Co., chairman of the General Convention Committee; R. R. Blackburn, vice-president, Southern California Gas Co., Los Angeles, chairman of the Executive Committee on Excess Liability Insurance; Frank C. Smith, president, Houston (Texas) Natural Gas Corp., chairman, Executive Conference Committee; and W. E. Mueller, president, Colorado Interstate Gas Co., Colorado Springs, Colo., vice-chairman of that committee.

Mr. Mitchell will serve as chairman of the A. G. A. Executive Committee of the board. James F. Oates Jr., chairman of the board, The Peoples Gas Light & Coke Co., Chicago, will be chairman of the Special Committee of Executives on Public Affairs, and Ernest R. Acker, president, Central Hudson Gas & Electric Corp., Poughkeep-

sie, N. Y., will head the A. G. A. Finance Committee.

G. J. Sandusky, superintendent, consumer services, Southern California Gas, is chairman of the Committee on Gas Appliances, and J. H. Dennis, utilization superintendent, Long Island Lighting Co., Mineola, N. Y., will be vice-chairman of that committee.

N. B. Bertolette, president, The Hartford (Conn.) Gas Company, will serve as chairman of the A. G. A. Laboratories Committee, and William G. Rogers, president, The East Ohio Gas Co., Cleveland, will be vice-chairman of that committee.

N. C. McGowen, president, United Gas Corp., Shreveport, La., again will serve as chairman of the Committee on Natural Gas Reserves. W. L. Shomaker, vice-president, Northern Natural Gas Co., Omaha, Neb., was appointed chairman of the General Nominating Committee.

H. R. Derrick, president, Alabama Gas Corp., Birmingham, Ala., will be chairman of the PAR Committee. Serving with him as vice-chairmen will be John E. Heyke Jr., president,

The Brooklyn (N. Y.) Union Gas Co., Henry A. Eddins, executive vice-president, Oklahoma Natural Gas Co., Tulsa, Okla., and Edward G. Twohey, president, gas division, New England Electric System, Malden, Massachusetts.

Other board committee chairmen will be A. W. Conover, president, Equitable Gas Co., Pittsburgh, chairman of the Executive Safety Committee, and Charles H. Mann, treasurer, Columbia Gas System Service Corp., New York, chairman of the Committee of Executives on Taxation. F. D. Campbell, president, New England Gas & Electric Association, Cambridge, Mass., again will serve as chairman of the A. G. A. Committee on Atomic Energy.

Dean H. Mitchell has also announced that Remick McDowell, vice-president, finance and public relations, The Peoples Gas Light & Coke Co., has been appointed chairman of the General Public Information Planning Committee. Mr. McDowell was the initial chairman of this committee, formed last year to plan the Associa-

tion's public information activities and to coordinate those activities with similar efforts of other national and regional associations.

James F. Purcell, manager of public relations, Northern Indiana Public Service Co., Hammond, Ind., has been appointed chairman of the A. G. A. Public Information Projects Committee. This committee assists the Planning Committee in formulating and executing a strong public information program for member gas companies.

In addition, Miss Mildred R. Clark, home service supervisor, Oklahoma Natural Gas Co., has been appointed chairman of the A. G. A. New Freedom Gas Kitchen and Laundry Committee for the 1956 Association year. Activities of the committee have recently been expanded to include promotion of New Freedom Gas Homes in addition to gas kitchens and laundries.

Robert M. Dreves, secretary, The Peoples Gas Light & Coke Co., has been appointed chairman of the A. G. A. Corporate Secretaries Committee for the 1956 Association year,

according to John H. Carson, vice-president, The East Ohio Gas Company. Mr. Carson is chairman of A. G. A.'s General Management Section, which comprises five committees. Mr. Dreves has been employed by Peoples Gas during his entire business career, having worked part time for the company while in high school and college from 1926 through 1933. He was appointed secretary 1954.

Robert T. Sprague, manager, insurance department, Cities Service Petroleum, Inc., New York, N. Y., will serve as chairman of the A. G. A. Insurance Committee, Mr. Carson reports. Mr. Sprague entered the Doherty Training School in Denver after graduation from Cornell University in 1924. He successively served as valuation engineer, traveling auditor and insurance engineer. He was appointed manager of Cities Service Petroleum's insurance department in 1951.

F. W. Kraemer Jr., supervisor of stores, general office, New Orleans (La.) Public Service, Inc., has been appointed 1956 chairman of the Purchasing and Stores Committee, Mr.

Carson reports. Mr. Kraemer joined the utility as a clerk in 1929 after attending Tulane University. He was appointed supervisor of stores of the company in 1950.

Paul F. Hoots, assistant to the president, New Orleans Public Service Inc., is the new chairman of the A. G. A. Rate Committee. Mr. Hoots has held various engineering positions with the New Orleans utility, including that of chief engineer. At present he supervises rate, research, stores and building departments. He has been a member of the Rate Committee since 1948, and was a member of the Industrial Research Committee. The Rate Committee is now studying rate change acceleration, rate adjustment clauses, customer load characteristics, weather characteristics, rate fundamentals, and the training of rate men.

J. H. Guidroz, sales promotion manager, New Orleans Public Service, Inc., is the new chairman of the Marketing Research Subcommittee. He holds a Tulane University degree in mechanical engineering. (Turn to next page)



A. McDowell was appointed chairman of the General Public Information Planning Committee



New head of Public Information Projects Committee is James F. Purcell of Northern Indiana



The 1956 chairman of the New Freedom Gas Kitchen and Laundry Committee is M. R. Clark



Robert M. Dreves, Peoples Gas Light & Coke, now heads Corporate Secretaries Committee



R. T. Sprague was named to be chairman of the A. G. A. Insurance Committee



Purchasing and Stores Committee is headed by F. W. Kraemer Jr., New Orleans Public Service Inc.



Paul F. Hoots of New Orleans Public Service Inc. will head A. G. A. Rate Committee in 1956



A. G. A. Marketing Research Subcommittee will now be headed by New Orleans' J. H. Guidroz

ical and electrical engineering. He has served his company as air conditioning sales engineer, sales supervisor, customer service supervisor, and residential sales manager. He has been a mem-

ber of the Marketing Research Subcommittee since its start in 1953, and has served on the General Promotional Planning Committee and the CP Range Committee. The subcommittee pre-

pares reports on marketing research techniques and studies of gas appliance market characteristics, and provides technical guidance to other Association groups.

A.G.A. round-tables

(Continued from page 5)

tising and research—will be given.

The newest activity under PAR sponsorship—the Public Information Program—will also come under discussion during the afternoon. In conclusion, the floor will be open for questions and discussion regarding other A. G. A. activities.

Top Association officers and staff members have been assigned to attend

these various round-table meetings. While personnel attending will vary, those regional executives participating can be assured that answers to their questions will be forthcoming and that their suggestions will be relayed to the Board of Directors for consideration.

The initial meetings were attended by some 25 to 30 persons and the discussions are reported to have been informative and lively. Presiding at New York meeting, held January 16, was James

Comerford, executive vice president, Consolidated Natural Gas Company. C. H. Zachry, president, Southern Union Gas Co., and first vice-president, A. G. A., chaired the Southwest regional meeting held in Dallas on January 20. Other round-table sessions are scheduled for St. Louis, Jan. 30; Pittsburgh, Feb. 3; Boston, Feb. 17; Washington, D. C., Feb. 20; Atlanta, Feb. 24; Denver, March 1; Minneapolis, March 5; Chicago, March 12; and Portland, Ore., March 16.

Statler Hilton

(Continued from page 15)

adds an "outdoor" touch to steaks.

Stack after stack of dishes are kept warm by steam which circulates throughout batteries of enclosed cabinets.

King-size aluminum steam kettles are used in cooking soups, turkeys, beans and stews. One of these mammoth cookers can accommodate as much as a dozen turkeys at one cooking. Vegetables are cooked in numerous triple-deck steamers.

Deep-fat fryers put a golden brown to chicken and fish. Bread toasters, salamanders for broiling and retaining warmth in food, double-deck roasting ovens, and 15-gallon capacity coffee urns complete the gas equipment in the main kitchen. In addition to the standard gas cooking units the banquet kitchen is equipped with a gas-generated steam warming oven with a capacity for 500 meals served up on plates. The hot food is delivered to the various dining rooms by means of double-deck push carts.

The main kitchen is strategically located in close proximity to both the Grill and the Empire Room so that guests may be served the hot food quickly. The layout also provides for production-line efficiency in preparation of food. Meats, vegetables, fruits

and other raw materials come in from the outside, are stored temporarily, then passed through the kitchen as chefs and cooks prepare the menus for the day. At the other end of the kitchen, the finished meals go out to the dining rooms.

A bake shop adjoins the main kitchen. In line with Statler Hilton's policy of self-sufficiency, the bake shop makes all breads, rolls, pies, cakes and other "goodies" served hotel guests. Equipment consists of three double-deck gas ovens turning out 1,000 rolls in one baking. A triple deck steamer cooks fruit and custard pie fillings at fast and accurate temperatures so important in this operation. A gas "proof" oven raises uncooked bread and rolls to complete size prior to baking in the big gas ovens. A deep-fat fryer turns out hundreds of doughnuts daily.

The Statler Hilton kitchens reflect perfection in cleanliness and sanitation—a "must" order during any hour of the day or night. Dishwashing in the hotel has been made as mechanical as possible. Dishes are carried from the main dining room to the dishwashing area on a conveyor belt and then travel along another belt, 18 feet in length, through a dishwashing machine.

As they pass through the mechanical dishwasher, after being sorted, scraped

and prewashed, the dishes are thoroughly cleaned and sterilized by gas-generated steam at a minimum temperature of 180 degrees. The dishes are dried by steam heated hot air pouring over them.

The banquet kitchen and the main kitchen are equipped with separate dishwashers, each turning out approximately 10,000 clean and sterilized dishes an hour. A similar operation is conducted in the employee cafeteria kitchen. Glasses are cleaned and sterilized by steam in separate washers.

All of the 1,001 hotel rooms have Servidor service—guests' laundry and garments for cleaning and pressing may be placed in the room door and picked up from the hall without disturbing guests. These articles of apparel along with hotel's sheets, pillow slips, towels and other linens are cleaned and pressed in a fully equipped laundry in the hotel basement.

Seven rotating vats holding clothes weighing from 50 to 350 pounds per load, perform the washing chore. Wash water in the vats reaches a temperature of 130 degrees. The clothing goes through gas dryers, is ironed by huge mangles, each with capacity to turn out 700 sheets an hour. Towels and other fuzzy articles are fluffed in tumblers before ironing. A battery of ten steam pressers turns out suits and coats.

Search for Mrs. America

(Continued from page 4)

In New Hampshire four gas companies have joined up on contest plans: Allied New Hampshire Gas Co., with

George I. Barwick, vice-president, as contact; Concord Natural Gas Corp., Chester A. Hoadley, Jr., sales manager; Gas Service, Inc., Frank Campbell, sales manager; Manchester Gas Company, S. F. McCallister, vice-president. The four companies have named John Orr, advertising con-

sultant, as state coordinator for their promotion.

The Brooklyn Union Gas Co., Binghamton Gas Works, and Iroquois Gas Corp. of Buffalo will run the Mrs. New York State contest. Alan Smith, publicity supervisor, is acting as contest chairman for Brooklyn Union, and R. L. Dutweiler, sales manager of Iroquois, is chairman for his company.

F. L. Fagan, president of Gem Automatic Gas Company, Inc., in North Carolina, has signed his company up for the contest. In Ohio, Harry R. Hogan, assistant supervisor of domestic sales, is running a contest for The East Ohio Gas Co., and Paul D. Miller, dealer sales manager, is handling The Ohio Fuel Gas Company's promotion. Mr. Miller is also state chairman.

Portland Gas and Coke Company is back in the contest this year for the state of Oregon; James A. Sechser, sales promotion manager, is handling details. Two companies are sharing the promotion in the state of Washington: Cascade Natural Gas Corporation and Washington Natural Gas Company. P. F. Toman, sales manager, is chairman for Cascade, while J. Wilson Gaw, director of public relations, is running the promotion for Washington Natural.

Pennsylvania has the three big Pittsburgh companies and five divisions of the United Gas Improvement Company working together on a state contest. For Equitable Gas Co., G. M. Smith, dealer promotion manager, is contest chairman; for Peoples Natural Gas Co., E. E. Steven-

son, sales promotion coordinator; for Manufacturers Light and Heat Co., George W. Coulter, business promotion manager. The UGI chairmen are: Miss Theresa Husic, home service director, Harrisburg; Mrs. Nancy L. Howells, home economist, Lancaster County; Mrs. Dorothy W. Healy, home service director, Lehigh Valley; Alfred E. Bevans, Luzerne; and Thomas J. Snyder, dealer representative, Reading.

In South Dakota, Melburn Whisman, sales manager, is running a local contest for his company, Central Electric and Gas Company. Tennessee has the Nashville Gas Company already signed up for the promotion, with Terry Hart, general sales manager, as contact.

Sidney Supple of the Virginia Gas Distribution Corporation is acting as state chairman for the group of Virginia companies joining in: Roanoke Gas Co., Portsmouth Gas Co., Department of Public Utilities of Charlottesville, Shenandoah Gas Co., Petersburg and Hopewell Gas Co., and Commonwealth Natural Gas Corporation.

Amere Gas Utilities Company and United Fuel Gas Company are sharing the contest in West Virginia, with Melvin Tolle, district promotion manager, acting for the former company, and Charles E. Gordon, business promotion manager, for the latter.

J. H. Mikula, general sales manager of the Milwaukee Gas Light Co., is contest chairman for his company on the Mrs. Wisconsin contest.

New TV series

(Continued from page 4)

commercials or other messages. Robertshaw-Fulton will also make available to sponsors a selection of commercials on top burner cooking controls and automatic gas water heating. These one-minute spots are to be prepared with the cooperation of A. G. A.

It is expected that 50 per cent of the country's more than 27 million residential users of gas will be able to see

the Dione Lucas Show when the new series is first shown on March 1, 1956, Mr. Stainton said. Many leading gas companies including Boston Gas Co., Brooklyn Union Gas Co., Columbia Gas System and Philadelphia Gas Works Division of United Gas Improvement Co. have already announced they will sponsor the TV series.

Arthur B. Modell, vice-president of L. H. Hartman Co., will supervise the filming of the TV series. He will work directly with Robertshaw-Fulton's ad-

vertising agency, Morey, Humm & Johnstone, in contacting gas utilities across the country.

Mr. Stainton explained that Miss Lucas will present her entertaining cooking program on a specially-constructed composite range, whose maker will be unidentifiable. In addition to preparing foods using the new automatic top burner control, Miss Lucas will offer food hints, menu-planning suggestions, table-setting short cuts and a new question-and-answer feature.

Lone Star distribution division adopts regional structure

LONE STAR Gas Company, Dallas, Texas, last month adopted the regional plan of organization in its general division of distribution. The company's Waco, Abilene, San Angelo, Greenville and Oklahoma divisions, comprising the five subdivisions of the general division of distribution, now operate as regions under the direction of a regional manager, formerly a division superintendent.

"Adoption of the new plan of organization," Vice-President M. L. Bird said, "will enable the company to make a more effective use of the regional principle for decentralizing certain managerial functions and responsibilities, thus increasing efficiency and flexibility at both regional and management levels."

J. M. Lynn Jr. has been named assistant sales and promotion manager for the general division. He will succeed Carl L. Trevitt as general division sales and promotion manager

following the latter's retirement July 31. Mr. Lynn's territory will consist of 350 cities and towns in Texas and Oklahoma and he will have headquarters in Dallas. He replaces N. Kenneth Watkins.

Mr. Watkins has been appointed manager of the dealer assistance section in the general sales and promotion department of the general division of distribution, with headquarters in Dallas. The position of manager of the dealer assistance section is being re-established because of increased promotional activity in the dealer, architect-builder and liquefied petroleum gas fields.

Mr. Watkins began his career with Lone Star in 1947 as salesman at Wichita Falls and was assigned to special sales work in the Wichita Falls area in 1949. In 1951 he was appointed sales supervisor for the gas company's West Texas distribution territory and

stationed at Abilene. Two years later he became manager of the dealer assistance department and early in 1954, upon reorganization and enlargement of the company's merchandising program, was appointed assistant manager of the sales and promotion department of the general division.

John Perryman, one time city manager at Brownwood and Paris, has been appointed sales and promotion manager for the Dallas division of distribution. He succeeds J. M. Lynn Jr. Mr. Perryman will direct gas appliance sales and promotion activities for Lone Star in the Greater Dallas area. The Dallas division serves some 187,000 customers.

B. T. Murdaugh was named regional sales and promotion manager for the distribution properties in West Texas. He succeeds John Perryman. Mr. Murdaugh will direct sales and promotion activities in the Abilene region.

Solar energy

(Continued from page 13)

tuting interest costs on long term investments for annual fuel outlays. When this time arrives, industry will take the initiative and manufacture at a loss for awhile if need be in order to develop the market.)

Some 15 different types of collectors were exhibited. The newer developments in the flat plate types were:

a. The overlapped plate collector of George Löf, American Window Glass Company. This is surface coated to reduce reflection loss of incident light.

b. Collectors with selective-surface black coatings designed to raise the coefficient of absorption relative to reflection. These reduce heat losses from the collector and enable a higher equilibrium temperature to be reached. Collectors of this type were shown both by Maria Telkes, now of New York University, and H. Tabor of the National Physical Laboratory of Israel.

c. Not shown at the exhibit, but built for a completely solar heated house near Phoenix was a novel collector comprised of black cotton mesh through which the air could be drawn for very efficient heat collection and recovery. (The heat was then stored by circulating the hot air through crushed rock, and thence through the house or used directly. While lower investment costs were claimed, it was still admitted that the charges on fixed investment were not quite competitive as yet with the cost of gas in the Phoenix area.)

C. *Cookers.* Solar cookers were exhibited from Calcutta, India; Beirut, Lebanon; Tokyo, Japan; and Rangoon, Burma. The latter model was built by a carpenter with hammer, chisel and saw and exhibited by Freddy Ba Hli.

Oven cookers, aluminized plastic cookers, portable barbecue cookers were also shown by U. S. exhibitors.

Some of these were in action and under the intense morning sun, hot dogs were merrily boiling or frying. The reflectors were about the size of a large umbrella inverted to focus the rays on the cooking utensil. The capacity, however, was small and it would take a number of cookers, or some little time to cook a meal for a sizable family on sunny days; no cooking in the rain.

D. *Space and water heating.* Scale models and drawings were shown of

houses and farm buildings with proposed solar heating systems by The American Window Glass Co., Pittsburgh (George Löf, designer); University of California; Libbey-Owens-Ford Glass Co., Toledo, Ohio; University of Florida; the Dover, Mass., House of Maria Telkes; Massachusetts Institute of Technology designs (Dr. Hottel), and last, a revolving house which floated in a pond, so as to obtain the most favorable winter sun and summer shade, designed by the Sun Building Co., Grand Junction, Colorado.

One entire session was devoted to the discussion of architectural problems. This brought out the fact that the choice of suitable exposures in crowded urban areas would be extremely difficult, because of mutual interference from neighbors' trees, and annoyance to neighbors by the glare from the collector surfaces.

The only effective remedy suggested was to revert to the Pompeian style of architecture in which the house was built around an inner court in which the exposure of the solar collectors could be controlled. Since rebuilding large residential areas seems impractical, this would seem to limit the application of house heating on a large scale to rural areas and to such urban houses as happened to have favorable situations.

Combine systems

Upon one point all of the experts were unanimous. Complete house heating by solar energy, even in the South, is economically inferior to a combination of solar and fuel heating in which the peak winter demands and the sunless days are taken care of by conventional fuels. This not only simplifies the heat storage requirements, but reduces the size and cost of the collecting system.

It is obvious that peak heating loads of this kind would be particularly unattractive to gas utilities. Bottled gas and oil in the cities, and stoves or fireplaces in the country would seem to be indicated.

Data were offered by various speakers to indicate that these combination systems were now in the fringe area of being competitive with conventional fuels. Of course, the relative proportion of fuel to solar heating would be determined by the local climatic conditions.

As one speaker put it, the financing of solar heating would be in terms of the annual additional mortgage costs on the

house investment as compared to the annual fuel costs of conventional house heating. As one British expert pointed out, since the sun's energy is free (except for ground rent) efficiency of utilization means nothing. What we are concerned with is the Btu recovery per unit of investment cost.

E and F. *High temperature furnaces and mechanical engines.* The high temperature furnaces, some of American design and some French, employed such items as war surplus search light mirrors, parabolic aluminum reflectors, multiple small parabolic mirrors (3500 in one French Exhibit) and lens type units, including multiple plastic lenses.

Among the mechanical engines were:

a. a $2\frac{1}{2}$ horsepower Italian engine, operating on a closed cycle sulfur dioxide system, in which the latter was vaporized in a flat plate collector. This could operate an electric generator or a water pump.

b. a $1/40$ horsepower boiler designed by Dr. Abbott of the Smithsonian Institute. Solar energy is collected by parabolic mirrors and heats a high boiling liquid in a vacuum insulated tube. The vapors operate through a heat exchanger to generate steam at 200-225° C.

c. the Novoid engines. This engine produces pulsating mechanical energy from any heat source. The only moving part is a column of liquid, the heated end of which alternately explodes and condenses, producing a hydraulic thrust at the other end of the column.

G. *Saline water stills.* Some eight models were exhibited, all of which involved simple heating by focused sunlight.

H. *Photovoltaic converters.* The most interesting of these is the Bell solar battery and telephone system of which there is now one commercial installation in Georgia. As described in one of the technical sessions the efficiency has been raised from an initial six per cent to about 11 per cent of the incident radiation.

There is no hope of exceeding 15 to 20 per cent, because, (1) each photon can produce only one electron pair (i.e., one positive and one negative charge) and the photon energies decrease with increasing wave length and wave lengths above 1.1 microns are ineffective. For the higher energy photons of shorter wave length the excess beyond what is needed to make an electron pair is lost

as heat. (2) Some of the electron pairs formed recombine and produce no current. Hence beyond the 15-20 per cent recovery point the only hope is in cheapening the cost of the collector which is now very high.

For some time the only response to inquiries as to the cost of the silicon wafer—boron impregnated discs which form the "built in" electric field or p-n junction through which the photons are split into electron pairs—has been that these were very expensive. The highly purified silicon is made by Dupont, at a rumored cost of \$350 per pound. Each disc is a tediously prepared sandwich of silicon upon which is deposited a minute film of boron.

Recently data have been published on the first commercial collector at Americus, Georgia. This contains 432 discs, each the size of a quarter, and the cost of the complete assembly is said to be well over \$10,000. This means that the total disc area is about 297 square inches or 2.06 square feet. Hence the collector cost is over \$4850 per square foot.

Assuming an average daily solar radiation of about 2000 Btu per square foot and an optimum electrical recovery efficiency of 20 per cent, the solar battery would yield approximately 120 watt hours per square foot per day. This would make a collector cost of \$40,000 per Kilowatt hour per day of electrical capacity. Assuming, as one speaker did at the Symposium, that mass production might ultimately reduce the costs to one per cent of the present costs, the fact re-

mains that a capital cost of \$400 per Kilowatt per day of installed capacity is prohibitive from the standpoint of generating industrial electric power.

This does not mean that the Bell solar battery has no important commercial possibilities. Dry cells are also extremely costly in terms of electrical power units delivered, but are saleable where small amounts of conveniently packaged electrical power are needed, as in flashlights. There is no present hope that the Bell solar battery can be made cheap enough to produce industrial electric power from the sun and according to the Bell engineers, there is no more promising material, theoretically, than silicon for making an efficient p-n junction.

Seek food yields

I. Photosynthesis. This is a form of chemical photo conversion. The Chlorella type algae installations were discussed, for which yields of 20 tons of protein and three tons of fat per acre are claimed. Costs of 20¢ per lb. would be tolerable for food, but not for power.

The claim, however, that such yields far exceed those possible with higher plants was vigorously challenged by Dr. Thimann of Harvard University, who said that under ideal conditions very high yields had been realized with higher plants, and that the possibilities by breeding, mutation and selection were far greater. One limiting factor is CO₂ absorption and the trouble is the stomata, through which CO₂ is absorbed, is a

two-way gate through which water escapes, causing the stomata to close if the plant becomes dehydrated. Hence photosynthesis may operate through only a very small part of the day.

The possibility of combining root and fruit food production in a single plant by mutation experiments was also mentioned. As a field of research on food production the possibilities of the higher plants should not be written off in favor of Chlorella.

3. The future. The sessions closed on a note of research optimism. The results to date on solar energy utilization had been obtained with a tiny fraction of the money spent on nuclear research despite which, for many uses, solar energy was on the competitive fringe.

Dr. Erlandson said that we still had time, before the exhaustion of fossil fuels, to solve many of the problems confronting us. The most important immediate problem was to reduce the cost of solar collectors. There were many collateral problems such as chemical, mechanical, thermal and electro magnetic conversion.

It was announced that a permanent Solar Research Laboratory would be set up in Arizona. Steps were to be taken for forming a wider and more inclusive association and for a publication devoted to solar research.

In brief, the solar enthusiasts have as yet won no important battles, but they are agreed that they have just begun to fight.

Pittsburgh schools

(Continued from page 17)

student in each of the science classes. When a particular class is finished, the books are passed on to the next class. The idea behind having each student supplied with a book encourages entire class participation. By passing on the books, a sense of value is given to them—they are not merely excess to be thrown away.

Demonstration meters are particularly welcomed by the teachers and are being distributed on the basis of one for each senior high school. In cases where more than one would be desirable, arrangements have been made to have more in central locations. With "Wall Charts" and "Facts on How the Gas Meter Works," this makes for an effective presentation.

Another phase of the gas industry program presented to the schools involves field trips. An experimental field trip was arranged for Duquesne High School by Equitable Gas Company. Prior to the trip, science classes were given advance information on what was back of the gas industry. The film "Your Silent Partner" was shown and was followed by a question and answer period. A surprising number of technical questions were asked, which Equitable representatives answered.

In some instances, the students were asked to save their questions until they were in the field because they would actually see operations pertaining to their questions.

For the field trip, the teacher selected 40 of his most interested students. They were taken to some of Equitable Gas Company's field installations, including

various drilling rigs, an underground storage area, and a compressing station. In addition, the students visited the delivery point where Equitable receives Southwest gas from the Texas Eastern Transmission Corporation.

After the trip, the students were instructed to write a report on the trip and their impressions of it. These reports were amazing for the details the students had remembered, such as pipeline diameter, cost of drilling equipment, and gas pressures. One student's report begins: "The story of gas is as big as the story of Pittsburgh itself." There was no doubt of the success of the field trip. Students and the teacher involved requested another one.

General assembly programs are also presented to smaller schools for the entire student body. Here, an oral presentation is given by a qualified speaker, a

movie is shown, and a question and answer period follows. As yet, the larger schools have not permitted general assembly programs of this nature. The three gas companies are presently working on a program that will be good enough and of a high enough interest to gain acceptance for a general assembly program.

A science teachers' dinner sponsored by the three gas companies gave a big boost toward further explaining the program to teachers and principals. More than 275 school representatives attended the dinner at which Dr. J. S. Richardson, Professor of Science Education of

Ohio State University, was the main speaker. Professor Richardson spoke on "Science, The Reluctant Dragon." Christy Payne Jr., vice-president of Peoples Natural Gas, spoke on "Moving Up in The Top Ten," a story of gas industry growth.

A complete packet of educational material was also furnished to each teacher which included a material check-off sheet to be filled out by each school for needed educational material.

Each of the natural gas companies in the Pittsburgh area have had additional dinners for teachers. The total at this writing is 12 for over 1000 science

teachers, school administrators and gas company personnel.

As a tie-in with the entire program, the gas companies cooperate with educational television station WQED in supplying gas industry films. In the future, it is hoped that a school science series will be used on the educational TV programs.

The enthusiasm of the natural gas companies for the educational program and its value to the future of the gas industry is sincere. And the sincerity and belief in its value is showing results with the goodwill and acceptance of area schools.

Customer relations

(Continued from page 8)

is given a colorful booklet from the A. G. A.-EEI kit, setting forth the points covered in the day's meeting. In the weeks to follow the same employees will receive other booklets and perhaps attend a specialized customer relations session on another subject.

The first course, principles of customer relations, was used as a foundation course and every employee given the opportunity to attend. The other four specialized courses were given later and attended by those employees whose duties correspond with the material presented. In this way everyone attended at least two courses, some three, some four, and some all five, depending upon the nature of their work.

All material presented was obtained from the A. G. A.-EEI manual of customer relations. Employees did not attend more than one meeting a week. The committee wanted to allow at least a week for the information presented at each meeting to "soak in."

Between March 1, 1955, and June 17, 1955, 360 meetings were conducted. A breakdown indicates 2,641 employees attended 109 meetings pertaining to the principles of customer relations; 1,841 attended 81 phone interview meetings; 1,560 attended 67 field interview ses-

sions; 1,053 attended 50 correspondence meetings; and 992 attended 53 office interview meetings.

Employees who attended the meetings hold various positions at NIPSCO. They are linemen, servicemen, meter readers, meter repairmen, street department personnel, engineers, inspectors, clerical workers, and supervisors.

As could be expected there were some problems. Lack of group attention, poor audience participation, questions bothering employees outside the scope of the meeting, etc. The discussion leaders sent weekly reports to the training director who discussed them with the program committee. By the time the final sessions came around, very few problems remained that could not be solved by the discussion leaders on the spot.

What was the reaction to NIPSCO's extensive customer relations training program? And could the company time be better devoted to other business?

A clerical worker remarks, "When this program was announced I wondered if it would just get underway and be dropped, or if it would be carried through effectively to the finish. I was happy to see that the program was thorough from start to finish, and that the material presented at the two meetings I attended contained information that I really wanted to know."

An engineer said, "I'm in full agree-

ment with the principles outlined at the meetings. I always wanted to know more about customer relations and those sessions answered—not a portion—but all of my questions."

A stockholder who read about the meetings in the employee magazine, the *NIPSCO PICTURE*, wrote a letter which, in part, we quote: "As a consumer and a stockholder, I'm proud of your effective teaching. Business as a whole could take a lesson from you. Service before sales. Congratulations!"

Probably the most hard-hitting but favorable comment came from a lineman. He said, "I thought up to this time that all companies were in agreement with a remark made many years ago—'the public be damned.' I'm glad to see my thinking was incorrect. I'm proud to be a member of the NIPSCO team."

Mr. Mitchell and the planning committee believe that the time consumed by the meetings has paid dividends for the company. They are so certain of this that they have developed long-range plans for continuing the program. Right now the committee is scheduling classes for 150 new employees. In addition, the utility's industrial relations department will supply the committee with lists of new employees every three months. In this way NIPSCO employees will be kept up to date on the latest in customer relations.

Measuring gas use

(Continued from page 10)

Divide each equation by the coefficient of "x":

$$\begin{aligned} 19.763583 &= 0.221402w + 1x \\ 26.828770 &= 0.854240w + 1x \end{aligned}$$

Subtracting the second from the first

results in the single equation:

$$-7.065187 = -0.632838w$$

The resulting value of "w", 11.164, derived by dividing both sides of the equations by the "w" coefficient, is substituted in one of the equations having two unknowns ("w" and "x") to

arrive at a value for "x". In like manner the values of "y" and "z" can be derived by first substituting the now known values of "w" and "x" in one of the equations with three unknowns ("w", "x" and "y") to find "y" and then substituting the three known values in one

of the original equations to find the fourth unknown "z".

The average annual consumptions thus derived are as follows:

Range (w)	= 11.164 mcf
Water Heater (x)	= 17.292 mcf
House Heater (y)	= 66.734 mcf
Refrigerator (z)	= 7.892 mcf

Subtraction method

The subtraction method of estimating the average consumption of appliances is a simple, short-cut method whereby the average use per customer for a certain appliance or group of appliances is subtracted from the average use per customer of another group using one additional appliance. For instance, subtracting the average consumption of all customers using a range only from the average total consumption of all customers using range and water heater would theoretically yield average water heater usage.

However, caution must be exercised in applying this method of determining individual appliance consumption, as the subtraction of the indicated use of only one appliance from the use of a combination frequently gives erratic results. For example, the data here under analysis shows for 39 customers using only a range, the average annual use was 15.795 mcf. For 45 customers having only water

heaters, the average annual use was 20.600 mcf. While this would indicate an annual use of 36.395 mcf for the combination, the sample shows that for 109 customers having the combination of range and water heater the average annual use was 27.890 mcf.

It is frequently true that the consumption patterns and living habits of customers using many gas appliances differ from those of families using only one appliance, thus introducing a source of bias into this procedure.

By applying this principle, using the same symbol designations, to the original consumption data, the following varied results could be obtained:

w = 15.795 (a)
x = 20.600
w + x = 27.890
but w = 15.795
therefore x = 12.095
w + x = 27.890
but x = 20.600
therefore w = 7.290 (a)
w + x + y = 95.119
but w = 15.795
and x = 20.600
therefore y = 58.724 (b)
w + x + y = 95.119
but w + x = 27.890
therefore y = 67.229 (b)
x + y = 84.464
but x = 20.600
therefore y = 63.864 (b)
w + x + y = 95.119
but x + y = 84.464
therefore w = 10.655 (a)

There are numerous other results that could be obtained for individual appliances by alternative substitutions, but the availability of 3 different answers for "w" and "y" is sufficiently illustrative. The following variety of results are obtainable through the subtraction method of deriving average annual consumption of appliances:

Range (w) —	from 7.290 mcf to 15.795 mcf
Water heater (x) —	from 12.095 mcf to 20.600 mcf
House heater (y) —	from 58.724 mcf to 67.229 mcf
Refrigerator (z) —	from 7.954 mcf to 8.485 mcf

It is quite apparent upon comparison of the results of the application of these two methods of deriving average annual consumption of appliances, that the least squares method, while more time consuming, gives more reliable and accurate results. The need for applying this more complicated method depends upon the extent to which consumption of any group of customers using one appliance only is not typical of system-wide consumption by that appliance.

Admittedly this may be difficult to measure without undertaking the calculations. Whether the improved accuracy thereby attainable warrants its use in preference to the far simpler subtraction method is something which must be determined by the individual company.

Columbia survey

(Continued from page 11)

the distributor or manufacturer and resell to the builder with enough mark-up to cover only operating expenses.

As a further step in lining up potential new gas appliance customers, more promotion is being aimed at young homemakers through classes for new brides and schoolroom home economics classes. Promotional material furnished by the American Gas Association is being distributed to classrooms.

Another dealer aid which Columbia announced recently is an extended credit plan, whereby dealers may sell their paper to System companies at the time of the appliance sale. The companies assume the responsibility for collecting the payments at their gas offices. They furnish dealers with an order pad, credit information form and interest table. Interest charges are low, and the dealer receives his check quickly.

To encourage the sale of Servel gas re-

frigerators, Columbia companies have agreed to make all installations at no charge to the dealer or his customer. Thus the dealer is relieved of an installation expense which he would otherwise incur on the sale of a gas refrigerator but not on an electric.

Columbia's employee education program has been stepped up considerably. During 1955, one Group of companies completed the GAMA sales training program, and another developed a program of its own for sales and general employee training.

In the area of dealer training, sales presentations have been developed on three makes of gas ranges which dealer representatives show to appliance sales staffs. These are 15-minute felt-board presentations with recorded voices. More than 500 dealers and their salesmen have received the presentations to date, and their response has been enthusiastic.

Other phases of business promotion have been stepped up also. There will be more cooking school demonstrations, all-

gas home promotions are being expanded, and advertising policies are being re-examined.

This year, the survey may be repeated, and Columbia will have an indication as to what results have been achieved from its extra efforts.

For those gas companies that may be interested in conducting a similar survey, a brief description of the methods used by Columbia follows:

The size of the "cluster" used in the survey was five. Assuming a hypothetical "random" number of 55, the persons surveyed in the first cluster would be names 55, 60, 65, 70 and 75 in the addressograph file. The next cluster would include names 110, 115, 120 and so on. This system was feasible because the addressograph file from which the names were selected was set up in the same chronological and geographical order as the meter books.

In addition to providing randomness, this procedure enabled the surveyors to use a crew of five interviewers to visit a

(Continued from preceding page)

group of five customers living relatively close together. Travel was held to a minimum.

The use of a sample size of 4,300 limited the maximum error in the total System results to ± 1.23 per cent with the maximum of disagreement in replies. If 80 per cent of the customers agreed on a reply, the maximum error was reduced to ± 1 per cent.

Thus the sample was considered representative, mathematically random, and

accurate enough to permit the desired analysis of statistical results.

To conduct the survey, Ketchum used three teams of experienced interviewers who had undergone a training program developed for this specific poll. Emphasis was placed on the need for accuracy. During field work, interviewers were closely supervised by members of the Ketchum staff. Customers were contacted in their own homes—an expensive survey method, but one that insures greater accuracy than is possible in other forms

of contact.

Following the field work, the questionnaires were edited and coded, and the information was punched into IBM cards. Cards were rechecked against questionnaires to eliminate every possible source of error.

Then the information was analyzed. Where doubts arose as to interpretation, "t Tests" or "chi Tests" of statistical significance were run to check the conclusions. So there is every reason to believe that the results are valid.

Programming

(Continued from page 24)

the amount of work involved in programming. First, it should be noted that the number of employees on a payroll does not affect the amount of programming required. This is determined almost entirely by the complexity of the payroll.

Con Edison's payroll can be described as medium complex; it covers a variety of types of pay, provides for numerous deductions from gross, has fairly elaborate provisions for sick pay, and includes a widespread labor distribution. At the present time, this payroll is produced through a combined punched card and clerical operation. Punched card equipment has been part of the operation for a long time, and by existing standards the system is highly mechanized.

Excluding the time required to train personnel in programming techniques, and the time spent in the evaluation and selection of a computer, the complete programming for the Con Edison payroll will require more than 20 man-years. This also includes the time required for procedure and analysis work. Presently, 17 employees are working full time on programming and they are assisted by several others on a part-time basis. This group will be fully occupied with the payroll programming until some time early in 1956.

The time that was spent in training this staff has not been included because it is not solely applicable to the payroll. However, training is an important part of the over-all effort and must be taken into account. Almost four man-years were required for teaching and developing the programming techniques of the group.

Con Edison is also programming its customer accounting. Thirty-two employees are programming full time and

it is expected that almost 35 man-years will be required to program completely the billing operations. The programming for customer billing includes the time required for preparing the new customer accounting system design and other related operations. In addition, this group has devoted more than five man-years to learning how to program.

Probably the first question that comes to mind on hearing of Con Edison's large programming effort is: where did the personnel come from to set up staffs of 17 programmers for payroll and 32 for customer accounting. The answer is that they were recruited entirely from within the company, largely in the controller's and commercial relations' department.

Source of personnel

They represent a mixture of young and older men. The older men were in the supervisory and staff categories, and are people who know our accounting procedures. Many of them are familiar with punched card operations. The younger men are either cadets or graduates of our cadet training course. In addition, several of the programming staff have been recruited from the engineering, purchasing, and other departments of the company.

All personnel was introduced into the programming work by first sending them to one of the machine manufacturers' courses. Afterwards, their training was continued by having them do actual programming on the payroll and customer billing procedures.

In both the payroll and the customer accounting programming, the manufacturers have assigned three or four programmers to each application. The work of these people has not been included in the estimate of man-years required to program Con Edison's accounting opera-

tions. The company has greatly appreciated the assistance given by the manufacturers. But it is not unfair to say that the progress made in programming is largely the results of the company's own efforts.

Another question that may have occurred to the reader is whether any short cuts in programming have been found. Unfortunately, the report must be a negative one. It is apparent though, that as the programming staff acquires experience and skill, programming appears to be more manageable. Undoubtedly, when the next accounting operation is programmed the job can probably be done with greater facility and in less time.

There has been some recent discussion of automatic programming. The general idea of such programming is to let the computer do some of the work and so reduce the time and effort required in the preparation of a program. Whatever its future, automatic programming has not been developed to the point where it is of much immediate assistance in programming a complex accounting procedure.

Also, it should be noted that the machine manufacturers who are trying to develop automatic programming admit that even if fully effective, the effort required in programming will be reduced by less than 20 per cent. However, in spite of its present limitations, the intensive work being done on automatic programming does show an awareness on the part of the manufacturers that programming is a major problem and must be simplified if the high speed computer is to have an extended market.

Another question that suggests itself is whether the programming experience of one company can be of assistance to another. The answer to this question is variable. If an accounting procedure, such as payroll, of one company is exactly the same down to the last detail as

the payroll of another company, then the programming of the first company can be adopted by the second. However, even small changes between the two payrolls will greatly lessen this possibility.

In preparing for the application of the 705-EDPM to payroll, the programming of two industrial companies who have applied electronic computers to their payrolls was studied. Their programming was found of little help because of differences between Con Edison's payroll and theirs. In this connection, it is appropriate to note that adopting the experience of one company to another can not be done on a casual basis, but would require an extended period and the detailed help of the company whose programming was being adopted. Also, it is quite clear that unless the programming personnel of the adopting company has been highly trained, not much can be accomplished.

The general conclusions that emerge from this discussion are these:

(1) Good programming is essential to the application of an electronic com-

puter.

(2) Programming an accounting procedure is a long and arduous undertaking.

(3) There are no present short cuts, nor does there appear to be any immediate possibility of greatly shortening the process through automatic programming.

(4) The programming of one company can not be directly used by another company, except under unusual circumstances.

(5) Because of these conditions, programming may be a serious limiting factor to the widespread use of high speed electronic computers in utility operations.

Only one step

Even though difficult, programming should be kept in perspective. It is only one of many steps required before an electronic computer can be placed in service. In addition to the programming described in this paper, the preparatory work includes:

Evaluation and selection of equip-

ment. Planning and construction of the physical installation. Selection and training of personnel for programming and operating the computer. Complete analysis of present accounting procedures. Creation of adequate computer system designs to replace existing procedures.

Also, revision of routines for the remaining clerical functions. Transfer of existing records from punched card and other records to magnetic tape. Development of conversion routines to change over the present operations to the computer. Personnel questions raised by the elimination of clerical and punched card operations. Organization re-arrangements required for efficient computer operation.

However, in spite of all these problems, those of us who are working in the application field look forward to the time when the computers will be in operation. Our anticipation is based on the expectation that the computers will reduce the cost of accounting work, and will do it more easily, more accurately, and faster.

PG & E explains company program to employees with road show

PACIFIC GAS AND ELECTRIC CO., San Francisco, is "going on the road," expecting to cover 1602 miles in northern and central California with its 1956 road show for its employees, "There's No Business Like Our Business," devoted to the company's program. Fifteen cities in the company's service territory will have one-night stands of the production which will include a special movie, showing of anamorphic "wide-screen" slides, and a "live" stage show.

The first showing was in Stockton, Jan. 23. Other cities on the schedule are Sacramento, Santa Rosa, Oakland, San Francisco, San Jose, Salinas, San Luis Obispo, Bakersfield, Fresno, Auburn, Marysville, Chico, Redding, and Eureka. It is expected that a large percentage of

the company's 17,583 employees will be able to see the presentation at these engagements.

The purpose of the show is to acquaint all employees with the company's activities and to outline company objectives for the near future. The first act will be a sound movie of company officers in the general office building in San Francisco discussing the past year's activities and aims for 1956. The act includes a slide presentation by a company officer describing the utility's services. Terms like "12,587,000 tons of dishes washed by families in our territory each year; 5,800,000 tons of laundry handled each year—2½ times the weight of the San Francisco-Oakland Bay Bridge," are used to dramatize the importance of gas and electric service to customers of the company.

The second act, in addition to an anamorphic slide presentation of features of the company, will include four live skits by members of the company dramatizing events of the past year. The third act will open with Chairman of the Board James B. Black's message to employees. Following this, skits will depict life 10 years hence when future wonders become realities.

At each presentation of the show the company division manager of the area will "emcee" the program with remarks pertinent to the occasion. E. E. Whitworth, sales department representative, is directing the show, and scenery was constructed by the company's display department under direction of Chad Hulburt. Filmed portions were prepared by the advertising and publicity department.

Reserve early

THE Canadian Gas Association requests that those planning to attend make early reservations for the 1956 CGA convention, to be held at Manoir Richelieu, Murray Bay, Quebec, June 26-29. A full program of business sessions is planned, and a large attendance of delegates from all parts of Canada and the U. S. is expected. Delegates will receive a preliminary program and will be kept advised of new developments well in advance of the convention. For complete details, write to W. A. Higgins, secretary-treasurer, Canadian Gas Association, 6 Adelaide Street East, Toronto 1, Ontario.

South Jersey organizes planning, development

SOUTH JERSEY Gas Company, Atlantic City, N. J., has established a planning and development organization to cope with the problems associated with the rapid expansion in gas sales, according to an announcement by Theodore H. Kendall, president. Three departments within this group, operating under the supervision of Vernon F. Stanton, vice-president, will be headed by present personnel.

Werner H. Lewis, as manager of industrial sales and gas supply, has the general duties of promoting the sale of gas to industry, and planning for additional natural gas supplies and supplemental manufacturing capacity. Mr.

Lewis, a graduate of Michigan State University, joined the company in 1923.

William R. Wilson, engineer, has general responsibility for all engineering and construction. Mr. Wilson's service dates back to 1926. He is also a graduate of Michigan State University.

John W. Jardine, as manager of rates and research, has responsibility for rate studies, market studies, budget estimates and budget control. Mr. Jardine is a graduate of Muskingum College. He joined the company in January 1953.

All four men are members of the A.G.A.

Industry news

Sponsor legal symposium

VARIOUS PHASES of natural gas legislation now before Congress will be analyzed at the American Gas Association legal symposium, Waldorf-Astoria Hotel, New York, April 9-11.

Discussions on the first day will cover a broad outline of legislation including procedural aspects of the Harris-Fulbright bills from the viewpoints of the producer, and pipeline and distributing companies. The impact of these bills on contract prices will be studied.

The second session will be devoted to determination of a "reasonable market price" for gas, and to summarizing alternate proposals, constitutional problems.

Aspects of the present Harris-Fulbright bills will be discussed.

The third day will be devoted to explanations and interpretations of recent judicial decisions on cases involving the Natural Gas Act, and other problems pertaining to distribution, underground storage, and other operational topics.

Organize new Association of Washington Gas Utilities

EIGHT of the state's gas companies have formed the Association of Washington Gas Utilities for the purpose of coordinating public relations and promotional activities, and working with government officials in administering regulations governing natural gas.

The association is an outgrowth of the Committee of Washington Gas Utilities.

New association officers are: president, Charles M. Sturkey, Washington Natural Gas Co.; vice-president and executive director, Robert C. Hayes, former field director of the Association of Washington Industries; vice-presidents, Stewart Matthews, Cascade Natural Gas Corp., W. A. Cook, Portland Gas and Coke Co., and Nathan H. Gellert Jr., Spokane

Gas and Fuel Co.; secretary-treasurer, Leland Jones, Washington Natural Gas Company.

Associated companies, which serve 34 cities in the state, are: Washington Natural Gas Co.; Spokane Gas and Fuel Co.; Cascade Natural Gas Corp.; Twin Cities Gas Co.; United Gas Corp.; Natural Gas Corp.; Olympic Gas Co.; and Portland Gas and Coke Company.

Demonstrate thermostatically controlled range-top cooking

A MEAL complete from chicken fricassee to crepe suzettes was prepared in a recent demonstration of thermostatically controlled top-of-the-range cooking before the New Jersey Home Economics Association. The meeting was held in the home economics kitchen of the Public Service Electric & Gas Company auditorium in Newark. Over 50 home economic

specialists attended.

Miss Rhea Shields, home economics director for Robertshaw-Fulton Controls Co., showed how the "thermal eye," situated where the bottom of the cooking vessel touches the burner, controls the temperature. She described the "thermal eye" as "the first cousin to oven heat control."

She further explained "When you turn the dial to 200F, for example, the flame comes on and stays on until the food reaches 200F. Then the control turns off the flame and keeps the food at 200F until you want it." She emphasized that this means inexpensive cooking, since the heat is only on when needed. The control is now featured on various 1956 ranges.

Con Edison opens third service training center in Flushing

THE THIRD of three Consolidated Edison service training centers in the New York metropolitan area was opened in the company's central service station building at 40-22 Lawrence St., Flushing, Jan. 12. Plumbing-

appliance industry members attending the Flushing center's opening talks by C. W. Meytrott, assistant vice-president, and J. C. Murtha, sales promotion manager of Con Edison. Similar to two facilities established

recently in the Bronx and in White Plains, the Flushing service training center is operated by Con Edison to assist local appliance and plumber groups who install or service gas appliances for Con Edison gas customers.

Brooklyn Union vans display gas heat story



A moving story is narrated on the six vans carrying gas appliances for the Brooklyn Union Gas Co. The utility promotes gas heat in this striking blue and yellow display to its over three million customers.

Standardize statistics

INTERNATIONAL STANDARDIZATION of the terminology used in gas industry statistical reports was the order of business at the International Committee on Statistics meeting at Cologne, Germany.

The difficulty has been that statistical compilations vary from one country to another both in units of measurement and in meaning of technical terms.

Consequently, there has been difficulty in the interpretation of figures which are not directly comparable.

The meeting of this committee of the International Gas Union was presided over by R. H. Touwaide of Belgium, and attended by the following delegates: Y. Mainguy of France; Dr. E. Wende and Dr. Scherzer of Germany; C. Johnson of Great Britain; E. Bertini of Italy; J. H. Steinkamp of Holland; and H. Raeber of Switzerland. The Economic Commission for Europe was represented by J. Roel.

The committee will meet again with ECE representatives on Feb. 27-28 in Cologne to study the problem further.

Peoples Gas Light presents A.G.A. dishwashing skit

THE VIVID "Geiger counter" stage demonstration of dishwashing techniques was recently presented to a capacity audience of restaurant operators in the auditorium of The Peoples Gas Light and Coke Co., Chicago. It was sponsored by the utility in cooperation with the National Sanitation Foundation and the Chicago Restaurant Association. The demonstration and equipment are available to all American Gas Association members free of

charge (see January MONTHLY, page 33).

Highlight of the demonstration is the click of the Geiger counter when it is near dishes that are soiled with radio-active matter, and when near the same dishes after they have been washed in sub-temperature water. The instrument is silenced only when the dishes have been properly washed in 140F water, then rinsed in 180F water.

Several of these demonstrations have been

held in other cities to acquaint volume feeding operators with the necessity of adequate hot water to meet health department requirements. The additional load at an excellent load factor is a strong inducement for gas companies to push the upgrading of eating establishments that do not have the required hot water supply.

An ideal time to conduct such a demonstration is during the A. G. A. Commercial Water Heating Campaign, February-April.

Conference to highlight gas air conditioning, incineration

RESEARCH and utilization phases of gas summer air conditioning and gas incineration will take the fore at the eleventh annual Research and Utilization Conference, April 3-4, Cleveland, Ohio. Sponsors of the conference are the PAR Committee of Domestic Gas Research headed by Leon Ourusoff of Washington (D. C.) Gas Light Co., and the A. G. A. Utilization Bureau.

The Conference Committee's program chair-

man, F. W. Batten, The Manufacturers Light & Heat Co., Pittsburgh, Pa., has scheduled top executives and technical leaders from all sections of the country to address delegates on subjects of vital importance. The agenda has been coordinated primarily from suggestions made by gas utilities, gas appliance manufacturers, and others concerned with domestic appliances and utilization.

Special features include the presentation of

formal papers; three panel discussions; luncheon speeches by a gas industry specialist and a leading industrialist; and an open clinic discussion led by four gas industry members and a Cleveland builder or architect.

More detailed plans for the conference will be published in the March MONTHLY. Further announcements and attendance blanks will be mailed shortly by the A. G. A. Research Division.

NACE meeting features discussion on pipeline corrosion

NINE small discussion groups on pipeline corrosion will highlight the annual meeting of the National Association of Corrosion Engineers. Group leaders will be experienced in such fields as gas, oil, coatings and cathodic protection. The NACE twelfth annual conference and 1956 corrosion show will meet at the Statler Hotel, New York City, March 12-16. L. R. Sheppard, Shell Pipe Line Corp., Houston, and C. L. Woody, United Gas Corp., Houston, are group chairmen.

Four technical papers will be presented in the pipeline general symposium: "Performance Tests on Pipeline Coatings," "Cathodic Protection of Certain Semimarine Pipelines," "Experiments Employing Diatomaceous Earth in Products Pipeline Filtration," and "An Outline of a Physical Theory of Underground Corrosion." Symposium chairmen are L. G. Sharpe, Napco Paint and Varnish Co., Houston, and R. C. Martin, Plantation Pipe Line Co., Atlanta, Georgia.

The pipeline and underground corrosion round-table will be an informal meeting devoted to discussions. Chairmen are L. B. Nelson, Shell Pipe Line Corp., and O. W. Wade, Transcontinental Gas Pipe Line Corporation.

Other technical papers to be presented are: "Field Laboratory Testing of Wrappings for Buried Structures," "Further Study of Protective Criteria on a Pipe Section in a Uniform Environment" and "Application of Cathodic Protection in Israel."

Association Laboratories reduce fees for combustion tests

THE A. G. A. Laboratories have authorized a reduction in test fees for gas appliances, made possible because of the high level of activity now in progress at the Laboratories. Edwin L. Hall, director, has sent letters to various man-

ufacturers announcing the reduction in charges for conducting combustion tests, either as part of complete tests, or as partial performance tests. Combustion test cost reductions are as follows: domestic gas ranges, 10 per

cent; gas water heaters, 20 per cent; gas-fired room heaters, 20 per cent; hotel and restaurant ranges and unit broilers, 10 per cent; deep fat fryers, 10 per cent; domestic gas conversion burners, 30 per cent.

A.G.A. announces new publications during January

LISTED BELOW are publications released during the past month, and up to closing time of this issue of the MONTHLY. Information in parentheses indicates the audiences at which each publication is aimed.

ACCOUNTING

• Financial Reporting Practices and Trends as Disclosed by an Analysis of the Annual Reports to Stockholders of 56 Gas and Electric Companies for the Years 1952 Through 1954 (for accountants). By Labanca and Mills, and available free of charge from Headquarters.

LABORATORIES

The following nine publications are of interest to manufacturers of gas equipment, gas utilities, and city authorities. They are available from A. G. A. Headquarters, and A. G. A. Laboratories, 1032 East 62 Street, Cleveland 3, Ohio. Approval and listing requirements are effective Jan. 1, 1956.

• Addenda to American Standard Approval Requirements for Central Heating Gas Appliances, Z21.13.1b-1955, Volume I, Steam and Hot Water Boilers; 25 cents.

• Addenda to American Standard Approval Requirements for Central Heating Gas Appliances, Z21.13.3b-1955, Volume III, Gravity and Fan Type Floor Furnaces; 25 cents.

• American Standard Approval Requirements for Hotel and Restaurant Deep Fat Fryers, Z21.27-1955; \$1.50.

• American Standard Approval Requirements for Domestic Gas-Fired Incinerators, Z21.6-1955; \$1.50.

• Addenda to American Standard Approval Requirements for Gas-Fired Room Heaters, Z21.11a-1955; 40 cents.

• Addenda to American Standard Approval Requirements for Gas Water Heaters, Z21.10b-1955; 40 cents.

• Addenda to American Standard Listing Requirements for Gas Conversion Burners

for Domestic Ranges, Z21.39a-1955; 50 cents.

• American Standard Listing Requirements for Metal Connectors for Gas Appliances, Z21.24-1955; \$1.00.

• Addenda to American Standard Requirements for Installation of Gas Conversion Burners in Domestic Ranges, Z21.38a-1955; 10 cents.

PAR

• PAR Briefs for November and December 1955 (for gas company executives). Sponsored by PAR Committee, and available free of charge from Headquarters.

PROMOTION

• A. G. A. Catalog of Sales Promotion Aids (for sales promotion managers, sales managers, home service representatives). Sponsored by and available from A. G. A. Promotion Bureau; cost is 50 cents.

Ohio Fuel speaker wears "gas outfit" to illustrate gas uses



The "natural gas outfit" worn by Ohio Fuel Gas Company representative, Jane Magruder, helps her to explain the role of natural gas in industry. She is wearing clothes made of various synthetic fabrics (including the coat draped over a chair) produced by petro-chemistry. Above, she is explaining to a service club audience that modern cars have more power per pound because of gas heating processes.

AN EYE-CATCHING "natural gas outfit" is being worn these days by a young lady who represents The Ohio Fuel Gas Co., Columbus, Ohio. The interesting outfit is a dramatic way of illustrating the many important ways natural gas fits into modern living.

Miss Jane Magruder, the representative of the information department, appears for speaking engagements attired from hat to shoes in clothing made from natural gas as a tie-in for her latest talk—the role of natural gas in industry.

Her hat, dress, purse, stockings, shoes, scarf, coat, even her luggage, have been made using gas either as a raw material or in processing. Many of the clothes are made of "miracle fibers" produced by petro-chemistry, the science of turning gas, oil, or coal products into useful items.

Miss Magruder's dress, in fashionable black with wide collar, is made from a combination of wool and orlon. The soft, fur-like hat and coat are made of a combination of orlon and dynel. Shoes and matching handbag are of vinyl plastic, and the stockings, of course, are of nylon, one of the first and best-known synthetic fibers.

Miss Magruder is one of the most-traveled of the utility's employees. She has traveled some 50,000 miles and presented 250 talks to 12,000 listeners since the fall of 1953.

Lone Star range sales soar as employees join in campaign

LONE STAR Gas Company hit a new high in gas range merchandising during the October-November Old Stove Round-up when 4,065 individual sales were made throughout its operating territory in Texas. This figure beat the 1954 Round-up, a previous high, by 820 units.

By the end of the two-month campaign, part of A. G. A.'s national promotion sponsored by PAR, 3,714 of the 4,065 in reported sales had been installed. The over-all result of the sales drive was further strengthened by additional thousands of range sales made by Texas and Oklahoma appliance stores tied in with Lone Star's dealer assistance program. Many of these sales resulted from prospects turned in by Lone Star employees. (A state law prevents utility merchandising in Oklahoma.)

The range promotion represented the united efforts of regular sales personnel and employees from the field, shops and offices not generally assigned to sales. It was a matter of "extra effort" on a mammoth scale and for the first time transmission and production employees matched the work of distribution personnel in a sales activity.

Lone Star's 1955 Old Stove Round-up was patterned after the long-established theme of the distribution divisions—"Every Employee a Salesman." This enlarged sales scope saw practically all of Lone Star's 6,000 men and women on the firing line turning in prospects and actually closing sales in numerous cases.

Here are some of the significant aspects of the employee selling program: Practically all of the ranges sold were CP models. No large

trade-ins were allowed. There were no "give-aways" and extreme discounts were not permitted. In selling the high quality ranges, the company realized a good profit.

"Big accomplishment of the Old Stove Round-up," said Senior Vice-President Chester L. May, "was the progress made in meeting and overcoming electric competition. All promotional material stressed modernity and automatic features of gas ranges. Sales kits and lobby displays pointed to the merits of gas cooking.

"Practically all of our employees talked to friends, neighbors and mere acquaintances about the numerous advantages of the modern gas range. They literally closed hundreds of sales and turned in numerous prospects which hard-working sales personnel might not have been able to uncover otherwise. We could not have hired enough salesman to accomplish the job done through the all-employee sales program. All effort was entirely voluntary."

Competition between individuals and teams was sharp and enthusiastic. Districts battled down to the wire for sales leadership. Unusual promotion ideas developed by employees added to the success of the Old Stove Round-up.

One large distribution division designated key personnel in the Dallas headquarters offices as individual sponsors for each of its 16 districts. The sponsors included President D. A. Hulcy, Executive Vice-President L. T. Potter, Mr. May and M. L. Bird, vice-president in charge of the general division.

Individual accomplishments by employees and their wives highlighted the campaign. A chief clerk in the Vernon district, for example,

asked for an opportunity to sell—a life-time ambition. He closed 37 sales during October, ten of which were in one week. He was still going strong in late November.

Approximately 400 prospects were turned in by the 28 transmission division teams which competed in the sales race. Individual teams went over their quotas from as much as 200 to more than 800 per cent.

A transmission division meter inspector at Jacksboro came up with these results in addition to carrying on his regular work:

1. Called on every house in his home town for prospects.
2. Canvassed 50 per cent of the homes in an adjoining town and made contacts and received prospects in three other towns.
3. Was responsible for six appliance sales between receipt of an official's letter which outlined need for the division's help with sales and the division's first sales campaign.
4. Personally turned in 46 prospects in the transmission division's sales campaign.
5. Spearheaded his team which exceeded its quota 557 per cent before final tabulations were in.

Two employees in the Fort Worth distribution district accounted for 30 range sales between them during Old Stove Round-up. Most of the ranges were sold in the last four weeks, one of the men reported. He was credited with 23 of the sales, including a \$440 unit. One of the men, armed with folders and even a few contracts, said he "just knocked on doors." He has been with the company only three years.

Washington Natural plans to spend \$8 million this year

WASHINGTON NATURAL Gas Company's total investment for new construction and other preparations for natural gas in 1956 will be about \$8 million, as part of a \$22 million expansion program for a five-year period.

Most of the 1956 expenditure will come in the first nine months of the year. About \$5.3 million will be spent for supply mains to bring natural gas into the company's distribution systems, and about \$1.5 million will go for new distribution mains, services, meters, and pressure regulators.

In addition, conversion of customers' equipment and appliances, to be done by Conversions and Surveys, Inc. at no charge to the

customers, will cost the company about \$1 million.

The major expenditure, \$5,300,000, will be made for supply mains: \$3 million in the Seattle area; about \$1.5 million in the Tacoma area; \$600,000 in the Everett area; and about \$200,000 in the Centralia-Chehalis area. The Olympia area will be served by the company's existing supply main from Tacoma until 1957 when an additional main will be built to that area.

The company will call for bids on supply main contracts about Feb. 1, with work scheduled to begin about April 1 and be completed about Oct. 1.

Extensions of the distributions systems will

begin in February with a major portion of the work now planned to be completed when natural gas arrives in late summer. However, expansions of distribution systems will be on a continuous basis, for several years. The company expects to add 6,000 customers in 1956.

Washington Natural recently sought a Washington Public Service Commission certificate of convenience and necessity to enlarge its service area within the 125-mile territory between the northern limits of Everett and the southern reaches of Centralia-Chehalis, now served by the company. Should the certificate be granted, Washington Natural's estimates for a five-year expansion program probably will be raised.

Southern California plans \$48.5 million in expenditures

SOUTHERN CALIFORNIA Gas Co., Los Angeles, this year budgeted \$48.5 million, the largest amount in the company's 88-year history, to handle capital expenditures required by the increasing population and expanding industry, it was announced by F. M. Banks, president and general manager.

The record high capital budget topping last year's by \$15.5 million was attributed to costs of constructing a new 30-inch, 277-mile pipeline from Topock at the Arizona border to

Los Angeles.

Public Utilities Commission hearing on the new pipeline was held Jan. 9. Authorization is being asked to build the pipeline to deliver an additional 175 million cubic feet of gas per day from mid-continent sources to southern California.

The FPC has already authorized the El Paso Natural Gas Company to deliver the gas to the California border.

Total cost of the line is slated to run about

\$29 million, with Southern California and Southern Counties Gas Company sharing the cost, about \$20.3 million for the former and \$8.7 for the latter. The cost will be spread over a two-year period.

Largest single item in the budget is about \$19.5 million for the transmission facilities, including the new pipeline, development of the Playa del Rey underground gas storage project, and rebuilding the Ducommun Street gas dispatching station.

Southern Counties prepares record plant improvement budget

IN LINE with continued growth of areas it serves Southern Counties Gas Co., Los Angeles, expects to add a record 68,000 new meters in 1956 and has budgeted \$19,645,000—the greatest amount of money ever set aside by the utility for plant improvements in any one year of its 45-year history, and 22 per cent greater than last year's budget.

This figure does not include substantial expenditures required to build added transmission and supply facilities contemplated for construction later in the year to carry increased amounts of added out-of-state gas. Exact amounts of these latter expenditures are not known at this time.

Number of meters expected to be connected

this year is 28% greater than the previous high of 53,000 meters scheduled for connection in 1955.

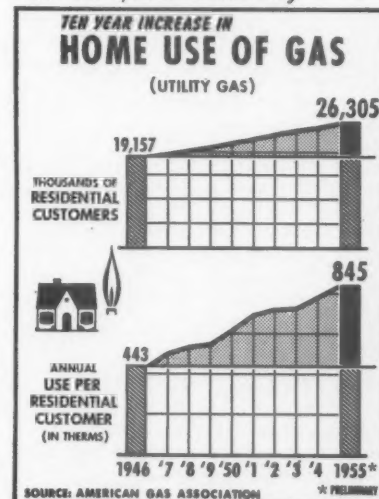
By far the largest portion of the 1956 budget is earmarked for new growth, with \$14,175,000 allocated for equipment to bring gas service to customers not now connected to the company's lines.

Baltimore plans five-year expansion

BALTIMORE (Md.) Gas and Electric Company has announced that expenditures for new construction during the next five years are estimated to surpass \$211 million, with \$36,975,000 or about \$7,395,000 annually budgeted for expansion of the gas system. About \$8 million of the five-year total will be spent for miscellaneous facilities including office and shop quarters.

The 1956 program includes funds for five major gas main installations required to make additional gas available to various sections of the company's territory by next winter, the largest being an extension of 12.5 miles of 10 inch main to augment the gas supply to the Annapolis area. The utility has added over 53,600 new gas customers to its lines in the past five years, an increase of 118 per cent.

Add 750,000 annually



During past decade, gas utility industry added about 750,000 new residential customers annually. Use per customer almost doubled, reflecting increased demand for gas for househeating, newer uses like air conditioning, incineration, drying

Utilities plan \$44 million outlay

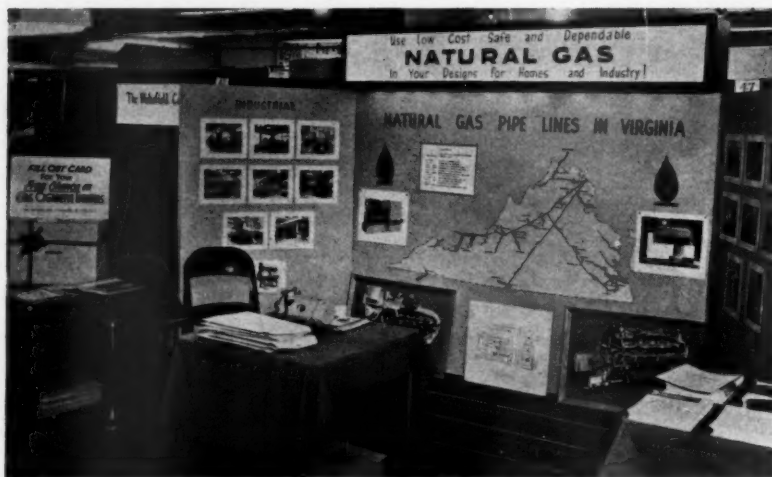
NATURAL GAS utilities plan to spend \$44,174,050 in 1956 for improvement and expansion of gas service in western Pennsylvania, the Pennsylvania Natural Gas Men's Association has announced. This is an 11 per cent increase over budgeted capital expenditures for last year, approximately \$46.50 for each of the more than 950,000 natural gas customers in the area.

For well drilling and distribution facilities the planned 1956 spending will be at a post-war peak, PNGMA reported. A total of \$14,694,400, one-third of the capital budget, has been allotted for additions and enlargements to distribution systems.

Similarly, in an effort to maintain the all-time record production of natural gas in the area, a new high total of \$12,793,000 has been earmarked by gas utilities to be spent in searching for new natural gas pools and drilling of production wells in the Appalachian area of western Pennsylvania, West Virginia, and Kentucky.

Enlargements and additions by PNGMA utility member companies to cross-country transmission pipelines which bring gas to city markets are scheduled for \$9,483,250 in 1956. Further improvement of underground storage facilities serving the area are planned at a cost of \$4,795,600.

Highlight gas at Virginia architect-engineer convention



Popular booth promoting natural gas was sponsored by 12 Virginia transmission and distribution companies at annual convention of Society of Professional Engineers and American Institute of Architects

TWELVE Virginia natural gas transmission and distribution companies recently brought gas to the fore at the annual joint meeting of the Virginia chapter, American Institute of Architects and the Virginia Society of Professional Engineers, at Roanoke.

The companies jointly sponsored an exhibit showing all the natural gas pipelines and distribution facilities in the state by means of a lighted map. The display was so successful that gas companies have been invited to participate again next year. Representatives of the companies and appliance manufacturers were present to discuss the potentialities of gas with visitors to the booth.

Complimentary kits containing American Gas Association literature were distributed. The kits, imprinted with the names of architectural and engineering groups, contained *A. G. A. Preprints* of gas usage, *A New Look at the Gas Industry*, the *All Gas Builder* catalogue, *American Builder* magazine, and additional material supplied by Carrier Corp., The Coleman Co., Inc., Cobell Industries, Inc., and other appliance manufacturers.

Brooklyn Borough Gas rewards safety-conscious employees

CONTINUING its safety campaign, with its year-round slogan, "Make every day safety day," Brooklyn (N. Y.) Borough Gas Company will reward all employees except staff members and officers with an extra day off with pay in 1956, for reducing to six the number of lost-time industrial accidents in 1955.

In making this announcement, Walter M. Jeffords Jr., president of the utility, praised all the employees for their cooperative spirit and eagerness to keep flying the company's safety flag which goes up every possible day. The flag reads: "We worked safely yesterday."

In addition to this accomplishment, the company's automobile drivers improved their

previous record by reducing to three the number of preventable automobile accidents in 1955. In recognition of this accomplishment each of the 84 drivers of Brooklyn Borough Gas Company cars will receive a \$25 bond.

Both awards are group-incentive plans: if the objective is achieved, all participate; if not, none receives an award.

Mr. Jeffords stated that he did not think the awards alone were responsible for the company's excellent results, but that they kept the matter of safety constantly before the employees. He especially praised the company's Executive Committee of the Safety Council for its analysis of safety procedures and excellent work in planning the company's

efforts to provide safe service for its customers and safe working conditions for its employees. Philip B. Baas, the company's secretary, is the chairman of the Safety Council Executive Committee.

This committee establishes the company's Safety Program and directs the activities of the Safety Council, which is composed of all the company supervisors. Joseph Sharkey is now chairman of the council.

An Employees Suggestion Committee composed of three members of the Executive Committee including its chairman and the chairman of the Safety Council review all employees' suggestions received each month and award prizes for those accepted.

Equitable honors compressing stations employees for safety

EQUITABLE Gas Co., Pittsburgh, Pa., honored its 195 compressing stations department employees recently when they set a safety record of one million man hours without a disabling injury. The perfect accident prevention record spanned a period from April 1953 to October 1955.

The company held dinners in Pennsylvania

and in West Virginia so that all compressing stations employees might attend. Retired employees who had contributed to the record were also present.

D. B. Beecher, vice-president and general manager, presented Judson Bonsall, general superintendent of compressing stations, with an inscribed gold and walnut wall plaque in

token of the achievement. J. H. Marks, vice-president in charge of operations, presented each employee with a fountain pen engraved "Equitable Gas Company 1,000,000 Hour Safety Award." The pens matched a pencil that had been awarded when the group attained the 500,000 man-hour mark without a disabling injury.

Gas company stocks rank high among blue chip securities

FOLLOWING the lead of Providence Gas Co., which is in its 108th year of consecutive dividend payments on common stock, gas companies are well represented in the blue chip division of the two major stock exchanges.

Records of gas utility, pipeline and holding companies indicated that the New York Stock Exchange lists five with continuous common stock dividend payments for 30 years or more, and the American Stock Exchange lists three with 54 to 108 years of continuous payments.

New York Stock Exchange listings show Washington Gas Light Company with 104 years of annual payments; The United Gas

Improvement Co., 71 years; American Natural Gas Co., 52 years; Pacific Lighting Co., 47 years, and Lone Star Gas Co., 30 years.

American Stock Exchange records include Providence Gas Co., 108 years; Bridgeport Gas Co., 58 years; and National Fuel Co., 54 years.

In addition to these blue chip straight gas companies, the New York Stock Exchange lists 14 combination companies whose gas operations account for an important share of net income. They are: Cincinnati Gas & Electric Co., 103 years; Consolidated Edison Company of New York, 71 years; Philadelphia

Electric Co., 54 years; Central Hudson Gas & Electric Corp., 53 years; Public Service Electric & Gas Co., 49 years; Public Service Company of Colorado, 49 years.

Also, Iowa Power & Light Co., 47 years; San Diego Gas & Electric Co., 47 years; Baltimore Gas & Electric Co., 46 years; New York State Electric & Gas Corp., 46 years; Consumers Power Co., 43 years; Pacific Gas & Electric Co., 37 years; Delaware Power & Light Co., 35 years; and Louisville Gas & Electric Co., 31 years.

Figures include anticipated 1956 dividend payments.

Highlights of cases before Federal Power Commission

Bureau of Statistics, American Gas Association

Certificate cases

● **Iron Ranges Natural Gas Company:** The company has filed an application with FPC asking for authorization to construct and operate approximately 68 miles of transmission pipeline and 47 miles of supply laterals to various towns and cities on the Mesabi Iron Range in Minnesota. The pipeline will have a capacity of 55 million cubic feet of gas per day. It will extend easterly and westerly from a point of connection, located about midway between the villages of Aurora and Eveleth, Minn., with proposed pipeline to be constructed by Midwestern Gas Transmission Company for which application was filed last month.

Iron Ranges proposes to furnish natural gas at wholesale to the municipally-owned systems in Virginia and Hibbing; the system of Northwest Gas and Power Company at Chisholm and Eveleth; to two main line direct customers, Minnesota Power and Light Company and Erie Mining Co., and to 14 distribution systems to be constructed and operated by Iron Ranges in the cities and villages of: Aurora, Biwabik, Bovey, Buhl, Calumet, Coleraine, Cooley, Gilbert, Grand Rapids, Hoyt Lakes, Keewatin, Marble, Mountain Iron and Nashauk. The estimated cost of the proposed facilities is \$2.8 million.

● **Texas Eastern Transmission Corporation:** FPC has received an application by Texas Eastern for authorization to construct a new 30-inch pipeline from the vicinity of Beaumont, Texas, to the vicinity of McAllen, Texas, on the Mexican border, and for the expansion of the existing 30-inch system from Beaumont to New Jersey by addition of compressor horsepower and loop lines as necessary. The estimated cost of the project is approximately \$150 million.

The purpose of the proposed facilities is to provide Texas Eastern with additional supply facilities and increased system capacity to provide for the sale, principally to existing customers, of approximately 250 million cubic feet of additional gas per day. Texas Eastern at present has firm requirements for additional gas service totaling 228 million cubic feet per day. The additional 22 million cubic feet proposed will be utilized to supply anticipated future demands of both existing and prospective customers.

The proposed facilities include (a) approximately 422 miles of 30-inch pipeline from the Rio Grande River near McAllen, Texas, to Texas Eastern's Vidor, Texas, compressor station; (b) approximately 530

miles of 30-inch loop lines along the company's existing pipeline between Kosciusko, Miss., and Uniontown, Pa.; (c) approximately 45 miles of 24-inch pipeline from a point of connection with the company's facilities near Provident City, Texas, to a connection with the proposed 30-inch line described under (a) above in Matagorda County, Texas; (d) approximately 135 miles of supply and sales laterals; (e) five new compressor stations totaling 50,000 horsepower; (f) additions to existing compressor stations on Texas Eastern's present 30-inch line amounting to 20,780 horsepower; and (g) such metering and regulating stations as are required. The expansion of facilities in Pennsylvania will be accomplished in part through the company's wholly-owned subsidiary Texas Eastern-Penn Jersey Transmission Corporation.

● **Texas Gas Transmission Corporation:** FPC has affirmed a decision by Presiding Examiner Samuel Binder authorizing Texas Gas to construct a 105 mile supply line. Texas Gas will construct this line from a point in the East Lake Palourde Gas Field in Assumption Parish, La., to Eunice, Louisiana. Texas Gas also will construct loops paralleling sections of its existing system in Arkansas, Mississippi, Tennessee, Kentucky and Indiana, and additional compressor facilities totaling 19,190 horsepower. Total estimated cost of the project is \$20 million. The new facilities will be used to serve the increased firm requirements of Texas Gas' customers, estimated at 109 million cubic feet per day over its presently authorized service by the 1957-1958 heating season.

Rate cases

● **Panhandle Eastern Pipe Line Company:** FPC issued an interim order directing Panhandle Eastern to refund a total of \$36.1 million, plus interest at the rate of 6 per cent annually, to its wholesale gas customers for the period from February 20, 1952, through April 30, 1954, when a rate increase was in effect subject to refund of any excess charges. The commission specified, however, that its action was without prejudice to further refunds which may be appropriate as the result of a court order remanding the Panhandle rate case decided in Opinion No. 269 to the FPC for further proceedings on two issues—the treatment of the cost of company-produced gas and the treatment of revenues and expenses from gasoline plant operation.

The rate refund case arose from a commission opinion (No. 269) order issued April

15, 1954, prescribing wholesale rates for Panhandle which, based on the test year 1952, reduced the amount of a proposed increase from \$21.4 million per year to \$12.8 million annually. Although the new rates became effective May 1, 1954, the \$21.4 million increase had been in effect, subject to refund, since February 20, 1952.

Panhandle supplies natural gas to approximately 50 wholesale customers in Kansas, Missouri, Illinois, Indiana, Michigan and Ohio.

● **Federal Power Commission** reported that it had received a total of 13,531 rate filings from independent producers of natural gas in the first 18 months following the U. S. Supreme Court's decision of June 7, 1954, in the Phillips Petroleum Company case. The filings, made during the period from June 7, 1954, to December 1, 1955, included a total of 3,229 rate increases amounting to \$48.5 million annually. FPC suspended 221 of these increases, totaling \$15.8 million per year. Of the suspended increases, 189, totaling \$14.7 million yearly, were still pending as of December 1, 1955.

The filed increases included 1,978 tax increases, for \$6.9 million per year, and 1,030 other type increases, totaling \$25.8 million, all of which were allowed without suspension. Seventeen increases, for \$761,000, were suspended but later allowed without hearing, and 15 others which the FPC suspended were subsequently reduced and withdrawn. In addition to the increases, 1,183 tax rate decreases, totaling \$1.2 million annually, were accepted for filing during the 18-month period.

● In other FPC actions, **Atlanta Gas Light Company** was exempted from regulation under the Natural Gas Act pursuant to terms of the Hinshaw Amendment. FPC has now exempted a total of 79 companies, either fully or partially. FPC authorized **Montana-Dakota Utilities Company** to acquire the natural gas pipeline facilities of **Montana-Wyoming Gas Pipe Line Company**. The facilities, which are located in Montana and Wyoming, include approximately 340 miles of pipeline and compressor stations have been operated by Montana-Dakota under a lease agreement. Montana-Dakota will issue 241,577 shares of common stock to Montana-Wyoming in exchange for all of the latter company's properties and assets, and will assume Montana-Wyoming's \$4.9 million first mortgage pipeline bonds. Net investment of Montana-Wyoming's facilities were \$8.2 million as of June 30, 1955.

North Carolina State College plans two summer short courses

FOUR-WEEK short courses in gas technology will be held at the North Carolina State College, June 4-June 29 and July 9-August 3. They will be conducted by the college's department of chemical engineering and extension division, and will be held in campus

classrooms and laboratories. Practical instruction will be given through shop and laboratory practice in the technical aspects of the natural, manufactured, and liquefied petroleum gas industries. Lectures and discussions will stress information helpful on the job. Instruc-

tors are Frank Seely and C. A. Plank. Tuition, including all text and laboratory materials, is \$100. The class is limited to 30 members. For further details, write to: College Extension Division, Box 5125, State College Station, Raleigh, North Carolina.

Rheem line for 1956 bows in New York, on West Coast

INTRODUCTION of the full Rheem-Wedgewood gas range line for 1956 highlighted the three-day sales convention held Jan. 13 at Newark, California. A record turnout of company officers and directors, salesmen, division executives and advertising representatives was on hand as the Wedgewood major appliance division of Rheem Manufacturing Company announced its merchandising and advertising plans for the first quarter 1956.

Theme of the meeting was "The Big Switch for 1956," introduced by S. S. Battles, Wedgewood's general manager. Speakers included C. M. Hoover, general sales manager, and William Constance, merchandising manager. Mr. Hoover and Mr. Constance pointed to these highlights of Wedgewood planning for the first quarter of its diamond jubilee anniversary year:

An extensive advertising program concentrated in the West and embracing the media of radio, television, 24-sheet billboards, Sunday supplements, key city newspapers and trade publications.

An Acapulco-Mexico City holiday contest for Wedgewood dealers.

A free gift offer of early American trivets in a dealer traffic-building campaign to begin in March.

Promotion of the diamond jubilee anniversary theme.

Wedgewood's new gas range line introduces a three-way "Select-a-Broiler" incorporating an adjustable high broiler, a deep pan barbecue broiler and automatic twin rotisserie in four models of its top-line Franciscan series. This year Wedgewood, a pioneer in gas range color styling, will offer selected models in petal pink and canary yellow. Other features include decorator gray burner grates for the full line; use of black, gold and chrome on smartly styled backguards of top-line models; a central control panel; "Polar" pilot lights for economy and cool surface areas; and new design "from the chassis out" on the medium-priced Monterey series of gas ranges.

The Wedgewood gas range was also featured at a product show held for the press at

the Cloud Club, Chrysler Building, New York, on Jan. 19. Rheem has been seeking to expand distribution of its gas ranges, now sold predominantly in the West, to a national basis.

Rheem also previewed its X-56 water heater in a square jacket. The X-56 is designed to fit into a kitchen or even a closet, as well as in the basement or utility room. It comes in a wide variety of decorator colors.

Color, in fact, was a highlight of the Rheem products show. Water heaters for the first time take on a whole new panorama of color in the Rheem line-up. The homemaker may now specify just what color she wants to match her kitchen or utility room decor.

The Rheem show included a clothes dryer made by the Wedgewood division, which incorporates a number of exclusive Rheem patents.

It also featured warm air furnaces, with new silencing baffles built in. Rheem furnaces can be used in connection with the "Rheem-aire," the new year-round air conditioning unit introduced by the company.

A. O. Smith expands warm air heating models from 20 to 130

A COMPLETELY restyled and engineered as well as greatly expanded warm air furnace and home air conditioner line was disclosed in New York on Jan. 12 by the A. O. Smith Corp., to several hundred eastern and southern distributors for its Permaglas division. The expansion gives A. O. Smith major stature in the industry.

The distributors, meeting at the Biltmore Hotel, got their first peek at these furnace and air conditioner lines which will go into production at various dates during 1956 and will have the effect of expanding the total heating-air conditioning lines from 20 units to approximately 130 types and models.

The gas-fired types, which begin emerging from production in January, will range from 70,000 to 245,000 Btu input ratings. Both in range and models the new units vastly expand

the original three basic lines with which A. O. Smith entered the field of home heating several years ago. These units all offered 100,000 Btu input ratings.

A \$4.4 million expansion of plant and equipment at the Kankakee works of A. O. Smith currently under way revolves around the intended enlargement of the heating-air conditioning line, J. H. Brinker, Permaglas general manager, told the distributors.

Mr. Brinker indicated further that the nearly 200,000 square feet of additional space which will be provided for manufacture of these units is a major item in the virtual doubling of the Kankakee works. A. O. Smith as a corporation recently announced an over-all four-year growth program which will cost about \$50 million including the Permaglas division's program.

Of interest to the homeowner, the new furnace line conserves space. Units are as small as 14 inches wide and 25 inches deep, can fit anywhere in a home. Even the standard Lo-Boy unit is only 38 inches high, and absence of exposed controls add to both adaptability and beauty.

The new furnaces have color. There is a frosted copper finish to the top insignia, and the front panel, easily removable, is in high-temperature aluminum. The cabinets come in grey hammerloid finish. A built-in draft diverter enables the designers to save an average of eight inches in over-all height of these units.

In addition to being smaller and generally more compact than their predecessors, the new Permaglas heating units will be priced as much as 25 per cent lower than current units, A. O. Smith announced.

Dixie Products shows new 36-inch gas range in Chicago

THE NEW 1956 Dixiemaster 300 series 36-inch gas range, featuring a one-piece waterfall top for easier cleaning and a large 20-inch oven plus storage space made its debut for dealers in Chicago's American Furniture Mart last month.

According to S. B. Rymer Jr., president of Dixie Products, Inc., Cleveland, Tenn., "The new Dixiemaster has many outstanding features and styling in a classical manner which assures color harmony with all other

kitchen appliances and decor."

The oversized 20-inch oven door has a silicone-rubber seal, said to be among the first of its kind on any appliance, to retain heat normally lost through metal-to-metal contact on most ranges.

There is a two-inch blanket of fiberglass insulation around the oven for cool kitchen cooking.

A needle-point "Thrifty-Cool" pilot light is placed at each burner, cutting pilot gas con-

sumption by two-thirds.

The new range has four large "Therma-Flex" burners which combine instant, pre-set selection of most cooking temperatures with an infinite heat range from "keep warm" to full, hot flame. The Dixie 300 will feature a cast aluminum griddle which is removable to make a fifth extra burner. The griddle cover is flush with the range top and acts as a back splash when up. Grease is drained into an easily removable cup at stove front.

Bryant unveils sales plans and promotions at Atlantic City

BRYANT distributor principals and sales personnel gathered at Atlantic City's Haddon Hall Hotel Jan. 5 for the first 1956 regional sales meeting of the industry's home heating pioneer. Over 100 distributors and distributor personnel from Bryant's Eastern, Southeastern and Central sales regions attended the one-day session, according to Howard L. Clary, Bryant vice-president and director

of sales.

Delegates were given a preview of Bryant's 1956 product line and expanded advertising program for the new year. Bryant executives also unveiled new dealer sales promotions and sales training plans.

Guest of honor at the Bryant Atlantic City meeting was Richard N. Jones, advertising director of *House and Home* magazine, who

spoke on "The Home Building Industry in Transition." Noting the "revolution" in home building and its implications in the sale of component equipment, Mr. Jones stressed the marketing problems facing the producer who must first sell the team of builder, architect, prefabricator, mortgage lender and appraiser on the value of his product in helping re-sell the entire "package."

Roper sales conference hears 1956 merchandising plans

THE GEO. D. ROPER Corp., Rockford, Ill., presented its complete line of 1956 gas ranges to Roper sales representatives and managers at a three-day sales conference in the Hotel Faust, Rockford, Dec. 12-14.

Among the many new features presented at the meeting was a "controlled-heat" automatic top burner, called "Tem-Trol" by Roper.

Personnel were welcomed by S. H. Hobson, president of the Roper corporation. N. C. Kreuter, general sales manager, headed the session at which the new line of "fashion-famed" gas ranges were introduced. He also outlined Roper sales plans for 1956.

E. Carl Sorby, vice-president, described the

modern conveniences offered by new Roper cooking features.

Advertising, merchandising and sales programs for the complete line of gas ranges, built-in gas cooking units and automatic gas clothes dryers were presented at a meeting chairmanned by Cy Edwards, merchandising director.

He was assisted by J. Arthur Jenkisson, sales manager, special appliance division; L. L. Shibley, division manager; Stan Fowler, service representative; and R. A. Hamilton, advertising manager.

Plans for individual activities in the various Roper sales divisions were given by the re-

spective division managers. They were Vice-President W. J. Foster, Philadelphia; W. G. Parks, Omaha; W. L. Plummer, Atlanta; J. M. Phillips, Kansas City; and R. R. Chapman, Chicago.

Service policies were covered by T. J. Reynolds, service department manager, with the assistance of members of the service department. J. H. Makemson, vice-president and general manager, spoke on the success Roper has achieved as a result of "superior craftsmanship."

Objective of the sales conference was to familiarize Roper personnel with 1956 plans, policies and new merchandise.

New Servel gas refrigerators feature color for 1956

COLOR-BALANCED interiors and the exclusive "automatic ice-server" will highlight the 1956 gas refrigerator line of Servel, Inc., which will reach retail markets this spring. Judicious use of pastel shades against a light gray background lends a contemporary-design appearance to the new models.

Top Servel models will also carry the "automatic ice-server," which freezes ice cubes without trays, stores them in a container, and

automatically replaces them as they are used. In model sizes where the customer had a choice, 60 per cent of Servel refrigerators purchased in the past three years have been equipped with this feature.

Among the new features of 1957 Servel gas refrigerators will be (1) increased food storage capacity, (2) thicker, more spacious doors, which provide better insulation and improved performance, and (3) a single-door "auto-

matic ice-server" model. Five of Servel's seven gas models will have separate-coil two-zone freezing systems.

Other Servel advancements retained in the new models include automatic defrosting, non-breakable plastic vegetable fresheners, and full-width freezer compartments.

Bright aluminum frames—or "bezels"—are available to adapt any Servel refrigerator to a built-in installation.

Secretary McKay appoints 102 to National Petroleum Council

SECRETARY of the Interior McKay has announced the appointment of 102 petroleum industry leaders to serve on the National Petroleum Council during 1956 "to assure the continuous flow of valuable advice and information on petroleum to the federal government through the Secretary of the Interior and the Office of Oil and Coal."

Included among the new appointees to the council are: James Comerford, president, Consolidated Natural Gas Co., New York; Stuart M. Crocker, chairman of the board, The Columbia Gas System, Inc., New York; D. A. Hulcy, president, Lone Star Gas Co., Dallas, Texas; Paul Kayser, president, El Paso (Texas) Natural Gas Company.

Also, N. C. McGowen, president, United Gas Corp., Shreveport, La.; W. G. Maguire, chairman of the board, Panhandle Eastern Pipe Line Co., New York; George T. Neff, president, Texas Eastern Transmission Corp., Shreveport, La.; and J. Ed Warren, vice-president, The National City Bank of New York, New York.

Industrial wastes committee stresses need for more research

THE NEED for more trained personnel to carry out more detailed research was stressed at the recent National Technical Task Committee on Industrial Wastes meeting in Cincinnati. It was emphasized that there are only about 5000 sanitary engineers in the U. S. and that

only two per cent of these are engaged in research. High points of the speeches delivered at the meeting were the following: an outline of difficulties imposed by lack of specific information on what causes tastes and odors in water; a description of government and indus-

trial efforts to support research; a report on the revised water pollution bill pending in Congress; and a proposal for joint municipal and industrial activity in the actual treatment of wastes. The group elected Dr. C. Fred Gurham chairman; F. J. McKee vice-chairman.

Manufacturers announce new products and promotions

PRODUCTS

● The Patrol Valve Co., Cleveland, is introducing its GCO emergency gas cut-off safety valves for applications on all domestic water heaters. The manufacturer states that these valves completely stop the flow of gas to the water heater thermostat before a hazardous water temperature is reached. After the cause for overheating in the water heater is eliminated, the valve can easily be reset manually. The valve has a simple mechanism with no parts to wear out. Valve seat and other related mechanisms are not exposed to corrosive and scale-forming action of water. It will operate in any position, has no adjustments to get out of calibration. For further information, write The Patrol Valve Co., Dept. A. G. A-1, 2310 Superior Ave., Cleveland, Ohio.

PROMOTIONS

● Recorded radio commercials are now available from Ruud Manufacturing Co., Kalamazoo, Mich., to local retailers for promoting sales of Ruud Alcoa Alloy gas water heaters. A record containing a choice of 12 different singing commercials can be obtained free by any radio station for the use of gas companies, plumbing contractors, LP-Gas distributors, and other Ruud retailers. Receipt of the record by radio stations enables the Ruud sponsors to purchase spots on the local radio. During time provided at the end of each commercial the local announcer can tie in the name and address of the sponsor. Records can be obtained from the Ruud main office and all branches.

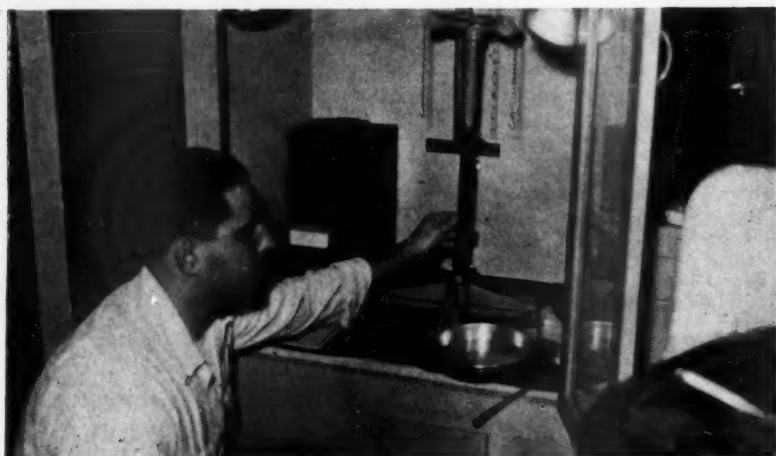
● To celebrate the manufacture of its three

millionth Permaglas water heater, A. O. Smith Corp., Kankakee, Ill., will award a free 30-gallon deluxe heater complete with installation to all Smith babies born on the day the appliance comes off the production line. Anticipated date is in late February or early March.

To qualify, families named Smith have only to submit to the company an affidavit of the baby's birth signed by the doctor and accompanied by a copy of the birth certificate. Statistics indicate there will be about 110 Smith babies joining the more than 1.5 million bearers of the name on that day. No Smythes, Schmitts, or Psmiths are included in the offer.

Permaglas dealers who install the winners' appliances will also get a free water heater of the same model.

Roper conducts additional range tests



Roper employee Pat Gagliano conducts one of the several rigid periodic tests of production model ranges now required of manufacturers by A. G. A. Laboratories in addition to regular field inspections by A. G. A. The new inspection program inaugurated at Geo. D. Roper is headed by Ralph Koebbeman

Elect officers

ELISHA M. JOHNSON has retired as president of Producers Gas Co., Olean, N. Y., after 42 years of service.

He is a member of the American Gas Association.

New officers of the company are: president, J. Harold Weis; vice-president, Forrest J. Wilson; secretary, Harley R. Higley; treasurer and general superintendent, Fred L. Davis; and assistant secretary and assistant treasurer, Carolyn P. McCord.

Werth sales manager

PAUL M. WERTH has been appointed general sales manager of the Quad Stove Manufacturing Co., Columbus, Ohio. Mr. Werth comes to Quad from Whirlpool Corp., where he was regional sales manager, responsible for the Ohio region.

Prior to this he was responsible for the south central region.

Consultants on fuel resource problems form new company

FORMATION of Resources Research, Inc., a firm of consultants specializing in solving fuel resource problems for oil companies, utilities and other industries, was announced last month by Dr. Louis C. McCabe, formerly scientist director in the United States Public Health Service.

William S. McCabe, consulting geologist, will be associated in the new firm with Dr. McCabe and Frederick S. Mallette, executive secretary of the Committee on Air Pollution Controls and research manager of the American Society of Mechanical Engineers.

The company will handle research and development in geology, mining, industrial wastes, water resources, and the economics and supply of conventional and atomic fuels. It will deal with such specialized problems as fuel sources and their evaluation for power, metallurgy and chemistry; research and engineering in air and stream pollution; water treatment and supply problems; and the development of fuel resource properties.

The staff of the new firm will include specialists in chemistry, chemical engineering, geology, physics, economics, and industrial

engineering. The aim is to bring together into one organization outstanding men in the highly specialized aspects of these fields, to provide a coordinated, readily available source of engineering and scientific talent for industry and government. As new contracts warrant, additional technicians will be employed.

The main office of Resources Research, Inc. will be in the Wisconsin Building, 4435 Wisconsin Ave., N.W., Washington 16, D. C. Other offices are in New York City at 55 West 42 St., and in Casper, Wyo., care of P.O. Box 1861.

Colorado Interstate Gas Company revises operating department

FOR MORE FLEXIBLE company operations, Colorado Interstate Gas Company has revised its operating department, setting up three divisions in the company's five-state operations. Newly appointed division superintendents report directly to General Super-

intendent J. W. Hopkins, Colorado Springs. Division I, embracing operations in the Texas Panhandle and Oklahoma, is now under the supervision of A. L. Legg, Amarillo; Division II, including operations in Kansas and eastern Colorado, is now supervised

by K. M. Henderson, headquartered at the company's installation at Lakin, Kansas. Division III, including the rest of the company's operations in Colorado, New Mexico and southern Wyoming, is now under the supervision of C. T. Crocker, Pueblo.



T. W. Phillips Jr.

president, T. W. Phillips Gas and Oil Co., died last month at the age of 81. Mr. Phillips began in the petroleum and natural gas business in 1897, when he joined the company his father had founded. He started as assistant to the president, and was elected president in 1912.

Mr. Phillips served in the House of Repre-

sentatives 1923-27. In 1926, 1930, and 1934 he unsuccessfully sought nomination for governor of Pennsylvania. His father had also served in Congress.

Jack Gilbert Holtzclaw

who for 26 years guided the progress of Virginia Electric and Power Co., Richmond, died recently at the age of 69. Under his leadership, the number of customers was increased sixfold from the original 100,000.

Mr. Holtzclaw, a graduate of Georgia Institute of Technology, had been employed by Stone & Webster, Savannah Electric Co., Pensacola Electric Co., and Gulf States Utilities Company. He became president of Virginia

Electric and Power in 1929.

Survivors are his widow, the former Mary Elizabeth Morris, and two daughters.

Don C. Nicol

manager of the New York City office of Ruud Manufacturing Co., died recently at the age of 47. He devoted his entire business life to selling automatic gas water heaters.

Mr. Nicol was employed by John Wood Manufacturing Company for 22 years, in that time traveling mainly in Chicago and the Midwest. He joined the Ruud water heater sales organization six years ago as New York district manager.

He was a member of the American Gas Association.

Philadelphia Electric names Rincliffe board chairman, Corson director

PHILADELPHIA ELECTRIC Company has announced the election of R. G. Rincliffe as chairman of the board and chief executive officer of the company. He will continue as president. Concurrently, A. S. Corson, vice-president in charge of finance and accounting of the utility, has been elected a member of the board of directors.

Mr. Rincliffe has been president of the company since 1952. He joined the utility in



R. G. Rincliffe

1923 as an engineering assistant, and progressed through various positions, including superintendent of gas manufacturing, purchasing agent, manager of electric generating stations, vice-president in charge of electric operations, and in 1950, executive vice-president. He has been a director of the company since 1950.

He was graduated from Yale University with a bachelor of arts degree, and from the Massachusetts Institute of Technology with a degree of master of science in chemical engineering.

Mr. Rincliffe is a member of many industry associations including the American Gas Association and the Pennsylvania Gas Association. He is a fellow of the American Society of

Mechanical Engineers, a member of the board of managers of the Franklin Institute and a member of the board of trustees of the Drexel Institute of Technology. He is also active in many civic endeavors.

Mr. Corson has spent his entire business career in the utility field. He pursued his studies at the University of Pennsylvania.

He was named comptroller of Philadelphia Electric in 1949, and was elected a vice-president in 1953. Prior to joining Philadelphia Electric, he was a vice-president of The United Gas Improvement Company.

He is active in the affairs of many industry and accounting organizations, including the Controllers Institute, American Gas Association, and Pennsylvania Gas Association.

Personal and otherwise

Stevenson adviser

APPPOINTMENT of W. T. Stevenson, president, Texas Gas Transmission Corp., and Western Kentucky Gas Co., to the advisory council of the Southern Institute of Management has been announced. Mr. Stevenson, a member of the American Gas Association, will work with other prominent Southern businessmen and educators in helping to shape the policies and programs of the non-profit foundation that is directing concerted attention to methods of judging, rating and appraising business management in 13 states of the South. The Southern Institute of Management is affiliated with the American Institute of Management.

Promote Kelley

EM. KELLEY, El Paso district manager, Southern Union Gas Co., was promoted last month to southern division manager of the gas company's western properties. Mr. Kelley, with headquarters in El Paso, will supervise and assist in the operations of the company's southeastern New Mexico and west Texas districts in addition to his present supervision of the El Paso and Alamogordo districts. He has been in the employ of Southern Union 26 years and served in various positions in Clovis and Portales, N. M., and in Rogers and Fayetteville, Ark., before becoming manager of the El Paso district in 1944. He is a member of A.G.A. and SGA.

Selas Corporation appoints Elmer B. Dunkak sales vice-president

SELAS Corporation of America, Philadelphia, announces the election of Elmer B. Dunkak to the newly created position of vice-president in charge of sales.

Mr. Dunkak brings to Selas more than 20 years of experience in the fields of combustion and process equipment, and is the originator

of widely used improvements in process heating and controls. Prior to joining Selas, he was engaged in private engineering practice, with offices in Baltimore and Washington, D. C., specializing in management problems relating to products and marketing. For the past 18 months he has served Selas as consultant to

the president.

Mr. Dunkak was previously associated with Public Service Electric and Gas Co.; C. M. Kemp Manufacturing Co., Baltimore, as vice-president and general manager; and Davison Chemical Corp., as vice-president in charge of engineering. He is a member of A. G. A.

Newton succeeds Tullis as Coleman design engineering vice-president

ALWIN B. NEWTON, chief design engineer and a director of The Coleman Co., Wichita, Kans., has been named vice-president in charge of all phases of the company's design and research activities.

He succeeds Boyd W. Tullis, who has retired but will remain with the company as special assistant to the president, and continue

as a member of the board of directors and the executive committee.

Mr. Newton joined Coleman three years ago, following employment at Acme Industries, Inc.; Chrysler Airtemp Corp.; York Corp.; and Minneapolis-Honeywell Regulator Company. A graduate of Syracuse University and Massachusetts Institute of Technology, he is the

author of numerous scientific papers on heating, refrigeration, and air conditioning.

Mr. Tullis came to Coleman in 1917, beginning as a lamp and lantern tester. He has been a foreman, product designer, general foreman, and chief designer of gasoline pressure appliances. He has gained wide recognition as a combustion engineer.

Columbia promotes Loomis, Crissman, Olson; Parker resigns

THE COLUMBIA GAS SYSTEM, Inc., has elected Cecil E. Loomis senior vice-president, Francis H. Crissman, vice-president and chief financial officer, and H. Edwin Olson, vice-president and secretary. Mr. Olson is also a director.

As senior vice-president Mr. Loomis will direct the gas system's operations under George S. Young, president. He joined Columbia as a statistician in one of the operating companies in 1928. He was elected assistant vice-president of the parent corporation and Columbia Gas System Service Corporation in

1950 and a year later was named vice-president of both.

Mr. Crissman joined Columbia as a bookkeeper in Pittsburgh in 1930 and was brought into New York in 1938. He was elected treasurer of the parent company after serving several years as assistant treasurer of both the parent and the service corporation.

Mr. Olson's business life has been spent in the utilities industry. He joined Columbia as an assistant treasurer in 1928 and went on to become treasurer, vice-president and a director of the corporation, as well as a member of

the boards of various Columbia Gas System companies. He replaces Dale Parker, who was secretary for the past 15 years.

Mr. Parker, known for his work in stockholder relations, was the third president of the American Society of Corporate Secretaries. Prior to joining Columbia in 1941, Mr. Parker was a director of M. Samuel and Co., Ltd., London merchant bankers, and had been a partner in Harriman Brothers and a vice-president and director of W. A. Harriman & Company.

All four men are A.G.A. members.

Neal succeeds Clifford

ALBERT G. NEAL, vice-president and manager and a director of Fitchburg (Mass.) Gas and Electric Light Co., has been elected president of the utility. He succeeds Frank S. Clifford who is retiring as president and remaining as a director after 53 years of service.

Mr. Neal started with Fitchburg in 1914 as office manager, succeeding to the positions of assistant manager, manager, vice-president, vice-president, and general manager, and director.

Prior to his Fitchburg career he worked at Suburban Gas and Electric Co., as accountant. He is a member of the American Gas Association.



Albert G. Neal

Robertshaw-Fulton appoints five

ROBERTSHAW-FULTON Controls Co., Greensburg, Pa., has announced the appointment of Woodford D. Miller to executive vice-president in charge of Eastern operations.

Frank H. Post, assistant vice-president, succeeds Mr. Miller as vice-president and general manager of the Robertshaw Thermostat division. A mechanical engineering graduate of Marquette University, Mr. Post has been with the company for 18 years.

George Mertz has been appointed assistant to the general manager of the Robertshaw Thermostat division and will be in charge of manufacturing.

Freeman G. Cross, vice-president, has been promoted to general manager of the Fulton Sylphon division. He is a graduate of the United States Military Academy, and has been at Robertshaw-Fulton for 28 years. He succeeds Jean V. Giesler, executive vice-president of the company, who retired as general manager of the Sylphon division after 43 years of service.

Mr. Giesler will continue to serve as consultant.

In addition, Richard D. Hall has been appointed a sales representative of the company. He was formerly with Southern California Gas Co., serving in various capacities in the customer service department for over eight years. His new office is at the company's Grayson Controls division, Long Beach, California.

Woodford D. Miller is a veteran of 19 years' service with the company, and is a mechanical engineering graduate of the University of Tennessee. The newly created position to which he has been promoted includes operations of the Robertshaw Thermostat division, Youngwood, Pa.; Fulton Sylphon division, Knoxville, Tenn.; American Controls division, St. Louis, Mo.; and Bridgeport (Conn.) Thermostat division. He will be situated at the executive offices in Greensburg.

Mr. Hall and Mr. Post are members of the American Gas Association.

Names in the news—a roundup of promotions and appointments

PIPELINES

Robert L. Bowman, manager of construction for Bechtel Corporation's pipeline division, has been elected a vice-president of the company's affiliate, Bechtel International Corporation. Mr. Bowman joined Bechtel in 1940, and has supervised the construction of some of the firm's major pipeline projects.

John W. Kirstein has been appointed field superintendent of pipelines for Natural Gas Pipeline Company of America, Chicago, following the Dec. 8 death of Edward D. Warren. Mr. Kirstein joined NGPL in 1940 as

pipeline engineer, and has worked with the affiliate company, Texas Illinois Pipeline Company. Named to supervise the gathering system of the company is **H. E. Boomer**, who has been the resident engineer on the recently completed construction program for another affiliate, Natural Gas Storage Company of Illinois.

Texas Illinois Natural Gas Pipeline Co., Chicago, reports several organizational changes in its Houston office. **E. Floyd Humphries**, who has been active in the offshore explorations of the company, has been named assistant chief geologist. **Edwin A.**

Allen, office manager at Houston since 1953, has been appointed assistant superintendent of production. Replacing Mr. Allen is **Albert G. Petzold**, a 10-year veteran with the company, who was formerly administrative assistant to vice-president of operations. He will assume his new duties about April 1.

MANUFACTURERS

After 23 years of service to Harper-Wyman Co., Chicago, **Leslie C. Battle** has announced his resignation. His last position was general manager and secretary-treasurer.

Texas Eastern appoints Bixby, Fitzpatrick, Thagard, Weiler

TEXAS EASTERN Transmission Co., Shreveport, La., announces the recent appointment of **J. E. Bixby** to assistant treasurer and **Robert J. Fitzpatrick** to director of public relations.

The newly created position of director of plans and economic research will be filled by **W. T. Thagard III**, and the new attorney in charge of the legal department is **Joseph F. Weiler**.

Prior to joining Texas Eastern, Mr. Bixby was comptroller, assistant secretary, and assistant treasurer of W. S. Bellows Construc-

tion Corp., Houston, Texas. A graduate of the University of Houston, he has been associated with Hughes Tool Co., Defense Plant Corp., and the State National Bank of Texas, Arkansas.

Mr. Fitzpatrick, a journalism graduate of the University of Notre Dame, was formerly vice-president of Albert Frank-Guenther Law, Inc., a New York public relations counseling and advertising firm which he served for 15 years. He will now be in charge of Texas Eastern's public relations, publications, and advertising.

An American Gas Association member, Mr. Thagard joined Texas Eastern in 1947 as administrative engineer, following employment at Ebasco Services, Inc., and Atlanta (Ga.) Gas Light Company. He is a Rice Institute alumnus.

Joseph F. Weiler was for five years an attorney for Transcontinental Gas Pipe Line Corp., and before that was a staff attorney for the Federal Power Commission. He received his law degree and a degree in petroleum production engineering from the University of Texas.

Public Service promotes Lane, Heuser, McQuade and Diederich

PUBLIC SERVICE Electric and Gas Co., Newark, N. J., has announced new promotions in its gas department.

John A. Lane, who started with Public Service in 1925, has been promoted from superintendent of distribution, Newark district,

to division staff engineer, Essex division.

William L. Heuser, with 35 years' service, has been promoted from assistant superintendent of distribution to district superintendent in the Newark district.

Frank McQuade of the gas engineering de-

partment has been promoted from senior designer to chief draftsman, and **William C. Diederich**, plant superintendent, West End gas works, is now division staff engineer, distribution department, Bergen division. Messrs. Lane, Heuser, Diederich, are A.G.A. members.

A. O. Smith promotes F. S. Cornell to executive vice-president

F. S. CORNELL has been elected executive vice-president and a director of A. O. Smith Corp., Milwaukee, Wisconsin. He formerly held the title of vice-president and

general manager, and before that, general manager of the A. O. Smith Permaglas division at Kankakee, Illinois. He is treasurer of the Gas Appliance Manufacturers Association.

Mr. Cornell, who has been with A. O. Smith since 1945, succeeds **Anthony von Werning** on the board of directors. The latter is chairman of the board of Froedtert Corp., Milwaukee.

Columbia Gas System names Wilson Pittsburgh group vice-president

GERALD E. WILSON has been elected vice-president of Pittsburgh group companies of Columbia Gas System, succeeding the late Earl D. Clutter. Three other organizational changes were also announced.

James G. McKee has been named superintendent of the distribution department, succeeding Mr. Wilson. Mr. McKee was formerly assistant superintendent of distribution.

Executive duties of Vice-president Dan J. Egan have been expanded to include responsibility for employee relations, purchasing, information, civil engineering, service and production departments. Previously he had responsibility for the employee relations department and handled special assignments for

the group president.

Treasurer C. H. Goetz will report directly to Mr. Peterson, instead of to vice-president and general manager F. W. Batten as in the past.

A veteran of 30 years' gas company service, Mr. Wilson will be responsible for all operating department activity. He has advanced through various assignments, starting in the gas industry as a member of a construction crew. He later served as a gas measurement inspector, distribution district foreman, district manager and was made assistant superintendent of distribution for the group companies in 1945. In 1952, he was elected assistant vice-president.

Mr. McKee started working with the group companies as an industrial engineer in Cumberland, Maryland. In 1952 he was made industrial sales manager for the group companies. He has been assistant superintendent of distribution since 1953.

Mr. Egan started as a part-time clerk in 1928 while attending college. He advanced through various accounting positions before being made personnel manager in 1940. In 1944 he was named employee relations director and was elected assistant vice-president in 1952. He was elected vice-president of the company in 1953.

Messrs. Wilson, Egan, and Goetz are members of the American Gas Association.

Columbia names Alan A. Cullman and Loring E. Heckman vice-presidents

ALAN A. CULLMAN and Loring E. Heckman have been elected vice-presidents of Columbia Gas System Service Corporation.

Mr. Cullman, promoted from controller, an office he has held since 1951, will be in charge of economic research. He joined the system in 1930 as an accountant, and subsequently

held posts as executive accountant and assistant treasurer.

Mr. Heckman, promoted from assistant vice president, will be in charge of operations and planning. He joined the system in 1928 as an assistant engineer. From 1941 to 1951 he was with the Petroleum Administration for War

and the Federal Power Commission, respectively. He rejoined the system in 1951.

Both men are members of the American Gas Association. Mr. Cullman, now a member of the Accounting Section Nominating Committee, was chairman of the Accounting Section in 1950-51.

Equitable Gas Company promotes safety men: Probst, Taylor, Gray

GEORGE M. PROBST has been promoted to manager of accident prevention at Equitable Gas Co., Pittsburgh. In his new capacity, Mr. Probst will be responsible for over-all direction and coordination of the accident prevention, welfare, and workmen's compensation activities of the company. A

veteran of 38 years with the company, he was formerly supervisor of safety and welfare.

In other appointments, Howard W. Taylor advanced to supervisor of safety and welfare, and Alex Gray moved up to supervisor of first aid training.

Mr. Taylor will be responsible for safety

training and inspections covering all departments in the Pittsburgh area, including the distribution department.

Alex Gray will now be in charge of first aid training for Equitable Gas Company personnel employed in both Pennsylvania and West Virginia territories.

Three Massachusetts utilities elect Vernon Tallman vice-president

VERNON M. F. TALLMAN has been elected a vice-president of Brockton Taunton Gas Co., Fitchburg Gas and Electric Light Co., and Springfield Gas Light Co., all of Massachusetts.

Mr. Tallman has been associated with the companies since 1920 successively as engineer, commercial and industrial manager, executive assistant, and consulting engineer. He is an

engineering graduate of the Massachusetts Institute of Technology.

Mr. Tallman is a member of the American Gas Association.

United Engineers promotes Schlegel and Gray; Hunter retires

UNITED Engineers and Constructors Inc., Philadelphia, has announced the appointment of Carl A. Schlegel as vice-president in charge of the firm's gas division. He replaces Charles W. Hunter, who is retiring after more than 50 years in the gas business. Succeeding Mr. Schlegel as gas sales manager is Oscar A. Gray, gas sales engineer.

Mr. Schlegel has been vice-president and manager of gas sales since 1946. He joined The United Gas Improvement Company as a cadet engineer after graduation from Stevens Institute of Technology in 1910. He was later employed for several years as engineer and manager of the Northern Indiana Gas & Electric Company.

Mr. Schlegel returned to the UGI Contracting Co., and was in charge of the estimating department before entering sales. UGI Contracting is the predecessor of United Engineers.

Mr. Schlegel is a member of the board of trustees of Stevens Institute and active in the

affairs of the American Gas Association and Canadian Gas Association. He also is a member of the Society of Gas Lighting and Guild of Ancient Suppliers.

Mr. Gray, for the last eight years gas sales engineer, brings to the gas sales manager post 34 years of experience with United Engineers and UGI Contracting. After completion of courses at Temple University and Pennsylvania Military College, he entered the company's employ and served as appraisal engineer; engineering assistant in the gas design division; construction superintendent in erection and operation of water gas and coal gas plants; and gas design supervising engineer. He is an A. G. A. member.

Mr. Hunter, who has been a director of the company and vice-president in charge of the gas division since 1928, retires after approximately 31 years' service with the company and UGI Contracting. He will continue as a consultant for the company.



Carl A. Schlegel



Oscar A. Gray

Following graduation from Cornell in 1905 he was employed in gas engineering capacities by Consolidated Gas Company of New York, Peoples Gas Light and Coke Company of Chicago, and Stone & Webster Engineering Corporation. Mr. Hunter was appointed assistant to the president of UGI Contracting in 1924 and elected vice-president in 1926.

Servel names new managers, elects Wall executive vice-president

SERVEL, INC., Evansville, Ind., has elected John H. Wall executive vice-president, and has announced several other new appointments to managerial positions.

For the past year, Mr. Wall has been vice-president and general manager of Servel's home appliance division. In his new position he will also be responsible for a number of related functions, including appliance sales, contract sales, product development, engineering, employee relations, quality control, plant maintenance, and procurement. Mr. Wall has been an industrial executive in Evansville since 1931. He was formerly general manager of the Bernardin Bottle Cap Co., Inc., and vice-president in charge of manufacturing for Kent Plastics Corporation.

Jerry Laine, director, appliance service department customer service section, has been promoted to manager, sales service department, with responsibility for supervising and co-

ordinating technical services to Servel users, dealers, and distributors. He started with Servel in 1930 as production analyst, transferred to appliance service in 1935.

Another 25 year employee, Carl E. Deig, has been promoted to manufacturing manager, home appliance division, with responsibility for all phases of appliance manufacturing. From inspector, Mr. Deig progressed through positions as welder, group leader, assistant foreman, foreman, general foreman, assistant superintendent, and manager of production control. J. N. Langley, chief dispatcher, will succeed Mr. Deig as manager of production control.

James H. George, who comes to Servel from Westinghouse, has been appointed sales manager of the Pittsburgh regions. Mr. George at one time served as merchandising assistant to sales manager at Philadelphia Gas Works.

Field appointments for seven district man-

agers and two sales representatives have also been announced. District managers, their new headquarters and previous positions are as follows: E. A. Dunham, New York, formerly manager of the Philadelphia district; Emil P. Nensel, Philadelphia, formerly manager of the company's sales service department at the factory; P. E. Arnold, Chicago, formerly manager of the Los Angeles district; Hollis G. Hayes, Washington, D. C., formerly dealer representative at the Chicago branch.

Also, Gene Holzschuh, Seattle, formerly regional appliance service representative in the Los Angeles area; James G. Hayden, Minneapolis, formerly sales representative in Boston; and Carl P. Duke, Omaha, formerly sales representative in Philadelphia.

New sales representative assignments will station Richard Roza, formerly Minneapolis sales representative, in Chicago, and Andrew Forbes, formerly sales trainee, in Los Angeles.

Robinson joins Republic Steel Corporation in advisory capacity

JFRENCH ROBINSON, recently retired president of Consolidated Natural Gas Co., New York, and chairman of The East Ohio Gas Co., Cleveland, has joined the staff of Republic Steel Corporation in an advisory capacity.

Mr. Robinson was president of the Amer-

ican Gas Association in 1944-45.

C. M. White, Republic Steel president, said "Mr. Robinson has had a very broad experience in the utility and other businesses in every phase of their operation. He will bring to Republic a background and knowledge that will be helpful in several of our departments. Re-

public is fortunate in being able to secure his services.

Mr. Robinson entered the public utility field in 1921 as geologist and engineer. In 1941 he was elected president and director of East Ohio and in 1951 president of Consolidated Natural.

Ebasco Services elevates K. W. Reece to executive vice-president

KW. REECE has been appointed executive vice-president of Ebasco Services Inc., New York.

He first joined Ebasco in 1925 and worked on construction projects in Pennsylvania. He has held many positions with the firm includ-

ing resident engineer, construction engineer, and construction superintendent of engineering and construction projects and general engineer. In 1939 he became head of the appraisal department, in 1945 assistant to the vice-president in charge of engineering and

construction, in 1946, engineering manager.

Since 1952 Mr. Reece has been Ebasco's vice-president in charge of engineering and construction responsible for the supervision of all appraisal, engineering, construction, purchasing and inspection work.

Name boats after Beckjord, and Rowe of Cincinnati Gas & Electric

AT TWIN CHRISTENINGS at the Greenline wharf in Cincinnati, two of the most powerful shallow draft boats on the Ohio River were officially named "Walter C. Beckjord" and "John C. Rowe" after the president

and a director of Cincinnati Gas & Electric Company. President Beckjord was cited during the ceremonies for his "record of brilliant accomplishment which not only has meant a greater Cincinnati Gas & Electric Co., but

also a greater City of Cincinnati," and for his outstanding leadership in civic projects. The ceremonies were conducted by Mike Creditor, president of the Ohio River Co., of which Mr. Rowe is chairman of the executive committee.

Elect Frederick, Hiatt

PACIFIC NORTHWEST Pipeline Corp., Seattle, has elected two new vice-presidents—R. C. Frederick and Allen B. Hiatt, both veterans of the natural gas industry. Mr. Frederick, a member of the American Gas Association, had been employed by Gulf Oil Corp., Pittsburgh, for 28 years before joining Pacific. His last position was coordinator of gas and gas liquids production department. He is a geologist and engineer, and has attended Ohio State University and Denison University.

Mr. Hiatt, who attended University of Oklahoma and Oklahoma A & M, was with Phillips Petroleum Company for 25 years before he joined Pacific. At Phillips, he held the positions of chief engineer, staff director of engineering, staff director of governmental regulations, and technical advisor.

Knight resigns

GEORGE F. KNIGHT, since 1952 assistant general manager, The Consumers' Gas Co., Toronto, has resigned because of other business plans. He was responsible for the company's outside operations, including transmission of natural gas from the Niagara frontier, expansion of facilities, and other planning, and of Toronto distribution and service. He was a director 1951-54. Mr. Knight joined the company as engineer in charge of construction and maintenance, and became general superintendent of works in 1946, with charge of all the company's manufacturing facilities. He is a member of the Canadian Gas Association, New England Gas Association, and the American Gas Association, with service on several committees and subcommittees of the A.G.A. Operating Section.

Strauss attorney

ROGER F. STRAUSS, engineer-lawyer of The Ohio Fuel Gas Company rate department, has been promoted to attorney in the legal department. He has been associated with Ohio Fuel since 1928, and previously served as manager in Medina and Berea.

Mr. Strauss was graduated from Purdue University in 1928, and joined Ohio Fuel as a cadet engineer shortly after graduation. In 1935, while serving as Ohio Fuel manager in Berea, Strauss entered John Marshall School of Law in Cleveland. He attended night school there for four years, and was admitted to the bar in 1940.

His work in the Ohio Fuel rate department has been mainly with contracts and legal matters. Last year he was admitted to practice before the United States Supreme Court.

Name Beardsley and Linde sales managers

WASHINGTON Natural Gas Co., Seattle, has announced the promotion of Robert L. Beardsley to industrial sales manager and Carl A. Linde to commercial sales manager. Both were formerly sales division men, and are University of Washington mechanical engineering graduates. Mr. Beardsley joined

Seattle Gas Company as a sales representative, advancing to industrial utilization engineer. Mr. Linde has been with Washington Natural and Seattle Gas for 25 years as sales engineer and design engineer in gas production. He has sold and engineered hundreds of gas heating installations.

Elect Charles R. Holloway vice-president

ELECTION of Charles R. Holloway Jr. to the new position of vice-president in charge of marketing for Portland (Ore.) Gas & Coke Company has been announced. Mr. Holloway heads all Gasco sales activities, which are being greatly enlarged with the

coming arrival of natural gas from the Southwest and Canada. He has been with Liberty Fuel & Ice Company since 1935, serving as vice-president and general manager in recent years. For two years he headed the Oil Heat Institute of Oregon as president.

Name Grimm manager of gas reserves

NORTHERN NATURAL Gas Company has announced the appointment of R. Dean Grimm to the newly created position of manager of gas reserves and availability in Northern's gas supply department. Mr. Grimm has over 18 years' experience in the natural

gas industry. He has been assistant manager of the gas reservoir department of Phillips Petroleum Company. He was graduated from Missouri School of Mines in 1937 with a bachelor of science degree in petroleum engineering.

Elect Harold Springborn vice-president

HAROLD W. SPRINGBORN has been elected a vice-president of Moore Publishing Co., New York. Mr. Springborn is executive editor of Moore's gas industry publications: *Gas Age*; *LP-Gas*; *Gas Appliance*

Merchandising; *Industrial Gas*; and *Brown's Directory of American Gas Companies*. Mr. Springborn, who has been with Moore since 1929, is a member of the Guild of Ancient Suppliers and the Society of Gas Operators.

Promote Ferguson at Equitable Gas

E. J. FERGUSON has been promoted to the position of assistant general superintendent of distribution in the Pennsylvania and West Virginia divisions of Equitable Gas Company. He will be responsible for all cus-

tomers service functions, including the dispatch center, meter repair shop, and meter records division. Prior to his promotion, he was assistant to the general superintendent of distribution.

Ebasco appoints Smith assistant manager

ALBERT W. SMITH has been named assistant manager of the sales, marketing and public relations consulting department of Ebasco Services. Mr. Smith joined Ebasco in

1952 as advertising and sales promotion consultant to Ebasco clients. Prior to 1952 he was advertising and sales promotion manager for Arizona Public Service Company.

Industrial relations

(Continued from page 18)

clause, did not become effective until October 12, 1953.

However, although the resignations were turned in before the effective date of the new agreement, the union insisted the three employees could not resign. The union asserted there was no hiatus between the new and old agreements because of the alleged extensions of the old agreement. And the union said its constitution forbade resignations except in the last ten days of the year.

The union's argument regarding the two contracts was to the effect that the employees were required to keep their membership in the union, and to continue to pay dues because the time between the termination date

of the old agreement, and the effective date of the new pact, was "bridged" by the day-to-day extension of the old contract. Thus, the union contended, the three employees would be held by the new contract's provision that current members of the union would be required to maintain their dues-paying membership.

The union is found by the Board to have received dues for a period extending into the term of the new agreement from the three workers. However, the Board finds the three men paid their dues under protest, and only after the union had threatened to have them discharged.

The Board orders the union to refund to the workers those dues collected for the period beyond the termination date of the old agreement.



1956

MARCH

- 12-16 •National Association of Corrosion Engineers, Hotel Statler, New York
- 19-21 •Mid-West Gas Association, Hotel Fontenelle, Omaha, Neb.
- 22-23 •New England Gas Association, Annual Meeting, Hotel Statler, Boston, Mass.
- 22-23 •Oklahoma Utilities Association, Annual Meeting, Oklahoma City, Okla.

APRIL

- 3-4 •A. G. A. Research and Utilization Conference, Hotel Cleveland, Cleveland, Ohio
- 4-6 •A. G. A. General Management Section, Spring Conference, Conrad Hilton Hotel, Chicago, Ill.
- 5 •GAMA 7th Annual Automatic Gas Range Conference, Hotel Pierre, New York City
- 16-18 •National Conference of Electric and Gas Utility Accountants, Hotels Biltmore and Commodore, New York City
- 16-19 •A. G. A. Sales Conference on Industrial and Commercial Gas, Hotel Roanoke, Roanoke, Va.
- 19-20 •Indiana Gas Association, French Lick Springs Hotel, French Lick, Ind.
- 19-21 •GAMA Annual Meeting, The Greenbrier, White Sulphur Springs, W. Va.
- 23-25 •Southern Gas Association Convention, Dallas, Texas
- 23-25 •A. G. A. Midwest Regional Gas Sales Conference, Edgewater Beach Hotel, Chicago, Ill.

MAY

- 6-9 •LPGA Convention and Trade Show, Conrad Hilton Hotel, Chicago, Ill.
- 7-8 •A. G. A. Residential Gas Section Eastern Gas Sales Conference, Park Sheraton Hotel, New York City
- 7-10 •A. G. A. Distribution, Motor Vehicles and Corrosion Conference, Congress Hotel, Chicago, Ill.
- 7-11 •National Restaurant Association Convention and Exposition, Navy Pier, Chicago, Ill. (A. G. A. will exhibit)
- 7-11 •A. G. A. Commercial Gas School, Edgewater Beach Hotel, Chicago, Ill.
- 10-11 •A. G. A. Gas Supply, Transmission and Storage Conference, Conrad Hilton Hotel, Chicago, Ill.
- 16-18 •A. G. A. Chemical, Engineering and Manufactured Gas Production Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

Personnel service

SERVICES OFFERED

Stockholder-Public Relations—23 years' service with New York City-based utility holding company in stockholder report writing and designing, S.E.C. filings including writing Registration Statements, etc. desire new opportunity. College degree in accounting plus courses in graphic arts. Will relocate, available immediately, (41). 1825.

Experienced Engineer—desires position with manufacturer of heating equipment. Six years' experience in design, development of residential, industrial gas and oil fired forced warm air heating equipment. Two years as chief engineer. Knowledge of A. G. A. procedure. 1826.

Personnel Manager—15 years progressively responsible experience in developing and administering Personnel programs. Can administer or set up training, employment, wage and salary administration, labor relations, safety and welfare sections, or supervise total department. 1827.

Factory Sales Representative—for past 21 years have managed sales, last in the New York metropolitan area for one leading national manufacturer of ranges, water heaters and space heaters. Seek new connection with a reputable manufacturer promoting and merchandising domestic gas appliances preferably in the New York area. Top notch performance and references. 1828.

Chemical Engineer—M.S.-registered professional engineer, 15 years diversified experience; 3 in natural gas distribution; 12 in supervising process development research. Half of the latter concerned gas problems. Pilot plants. Preliminary design and cost estimates. Desire administrative position in operations or research. Married, 3 children. (36) 1830.

Property Manager or General Superintendent—broad knowledge in construction, maintenance and operations. Thirty years experience in operations, industrial sales and local office affairs. 1831.

Public Relations Executive Available—broad corporation and trade association experience for more than 15 years. Versatile, capable of promoting meaningful down-to-earth program. Harvard Graduate School. Top references. 1833.

Consultant—available on a fee basis for consultation on your gas analysis problems. Knowledge of every method including instrumentation. 1834.

POSITIONS OPEN

Graduate Engineer—recent graduate engineer required for steel fabricator in the Philadelphia Area, for laboratory work relating to development and new products design on hot water heaters and pressure tanks. Experience with gas combustion and with A. G. A. requirements desirable. Permanent type position in engineering department, with liberal company benefits. Write giving complete resume. 0793.

Engineer—large eastern gas utility desires services of an engineer interested in appliance testing. Work includes necessary recommendations to manufacturers for changes in design to meet rigid requirements. Salary commensurate with abilities. Reply giving age, education and experience. 0794.

Natural Gas Sales Engineer—natural gas utility operating in Texas, New Mexico, Arizona, and Colorado needs qualified air conditioning and gas sales engineer to coordinate program to promote the greater utilization of natural gas. Must be able to design industrial air conditioning systems and initiate and administer company-wide air conditioning program. Travelling required. May headquarter anywhere in our system. Age 30-45. Attractive salary. Give complete resume of qualifications. 0795.

Graduate Mechanical Engineer, Jr., with knowledge of standard testing practices of A. G. A. for central house heating equipment and domestic water heaters, also knowledge of underwriters' tests for oil-fired central heating equipment. This is a good opportunity for a qualified engineer to become associated with a leading Midwest manufacturer's heating and air conditioning research division. Salary commensurate with ability. 0796.

Graduate Mechanical or Chemical Engineer, Sr., wanted by research division of large Midwest manufacturer, for design and development of gas-fired appliances. This is an exceptional opportunity for a man of experience and creative ability. Salary commensurate with ability. 0797.

Graduate Mechanical Engineer, M.S. or Ph.D. degree, with at least 10 years' experience in heating and air conditioning design and development. This is an exceptional position for an executive type engineer, who can carry a

high degree of responsibility in both engineering and leadership. Location Midwest, salary commensurate with ability. 0798.

Gas House Heating Engineer—exciting opportunity for experienced gas house heating engineer to launch a new career with gas utility in Pacific Northwest. Natural gas will arrive summer 1956. Major sales effort will start at once. Job can become No. 2 in 20-man sales department. 0799.

Engineer—opportunity to fill a key spot in fast growing natural gas utility company. Engineer with distribution experience needed before February 1, 1956. Natural gas will arrive in community, summer 1956. Initial assignments will involve load factor, industrial gas supply, peak shaving, leakage control and distribution operation. Job has potential for supervisory responsibility in existing operating department or future engineering department. 0800.

Efficiency Engineer—graduate engineer with at least two years' utility operating experience and basic knowledge of utility accounting functions. Will work directly under direction of vice president in analysis of property operation. Must be free to travel 75% of time. Submit complete resume and starting salary desired. 0801.

Project Engineer—with proved design and development experience related to gas fired residential heating equipment for nationally known mid-west manufacturer. Must be resourceful, well informed and capable of assuming independent responsibility. Knowledge of manufacturing techniques and familiarity with A. G. A. requirements are essential. 0802.

Residential Sales Manager—tremendous opportunity in Spokane, Wash., for domestic sales manager, natural gas. Second in command of 30-man sales staff. Gas merchandising experience and ability to hire and train domestic sales force essential. Principal effort to be in house heating. Company will merchandise domestic conversion burners, water heaters, ranges, etc. Give complete background, experience, references. Your reply confidential. 0803.

Industrial Gas Engineer—natural gas arrives in Spokane, Wash., July, 1956. Need man to head Industrial Commercial Dept. Experience in boiler conversions, industrial burners, etc., required. Give complete background, education, references. Your reply confidential. 0804.

Facts and figures

(Continued from page 20)

down 15.9 per cent from October 1955, when 107,000 units were put under construction. However the November's annual rate of private home building on a seasonally adjusted basis indicates that 1.2 million units will have been started during 1955, still a near record year.

A record 50,300 automatic gas dryers were shipped in November, up 37.5 per cent over November of 1954 and 11.8 per cent higher than October 1955 when a record 45,000 units were shipped. Electric dryer shipments during November totaled 106,900 units up 5.1 per cent over the same month a year ago. Shipments of gas dryers during the first 11 months of 1955 aggregated 326,000

units, up 54.3 per cent over the comparable cumulative period in 1954.

Gas appliance data relate to manufacturers' shipments by the entire industry compiled by the Gas Appliance Manufacturers Association. Industry-wide electric appliance statistics are based on data compiled by the National Electric Manufacturers Association and are reprinted by GAMA in its releases. Data on both gas and electric dryer shipments are released by American Home Laundry Manufacturers Association.

Total sales rise

Total sales of the gas utility and pipeline industry to ultimate consumers during November 1955 amounted to 6,009 million therms, up 11.4 per cent over

sales of 5,393 million therms in November of last year. The increases in gas sales can be attributed to the greater number of new gas customers, the colder weather experienced throughout most of the country and greater use of gas by industrial consumers.

Industrial production, as measured by the Federal Reserve Board index reached a new all-time high of 144 (1947-1949 = 100), up 12.5 per cent over November of last year. The Association's November index of gas utility and pipeline sales is 221.5 (1947-1949 = 100).

During the 12 months ending November 30, 1955, total utility and pipeline sales aggregated 65.8 billion therms, or a gain of 8.5 per cent over the 60.6 billion therms sold in the 12 month period ending November 30, 1954.

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